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AT&T, MCI prepare to launch SMDS

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The nation's two largest long-distance carriers are gearing up for a push into the Switched Multimegabit Data Service (SMDS) market, according to sources.

AT&T may roll out SMDS as early as the International Communications Association's (ICA) annual conference in May, while MCI Communications Corp. said it will conduct SMDS trials this year and launch the service if customer demand warrants.

AT&T is mum on its SMDS plans, but several sources and internal documents obtained by *Network World* indicate that the carrier is planning to make the service available this year. An AT&T spokeswoman said it is premature to discuss the carrier's SMDS plans but added that AT&T is talking to regional Bell holding companies about SMDS trials.

The documents indicate that AT&T's SMDS will be available at both T-1 and T-3 speeds, with zero seconds of call setup time (see graphic, page 41). The ser-

(continued on page 4)



PHOTO ©1992 DANILLE SWICK
IBM's Richard Anderson (l.) and Ellen Hancock speak via satellite.

Feds, states advance with benefits distribution nets

By Ellen Messmer
Washington Correspondent

RESTON, Va. — The U.S. Department of the Treasury this week will initiate a two-year pilot program to pay government benefits electronically to retired workers in the Houston area.

Treasury officials, who made the announcement at last week's Electronic Funds Transfer Association (EFTA) meeting here, said the pilot is a precursor to a nationwide system for federal Electronic Benefits Transfer (EBT).

Some state-level EBT efforts,

however, are even more aggressive. This month, Maryland became the first state to electronically issue the equivalent of food stamps and welfare checks under a mandatory program that uses a single debit card.

Both the Houston and Maryland EBT programs rely on existing packet networks now used to support retail point-of-sale terminals and automated teller machines. Federal and state EBT program coordinators, eager to hold down costs, want to prove

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IBM maps out SNA strategy for the '90s

Intros APPN support for mainframes, details plan for high-speed, any-to-any network architecture.

By Michael Cooney
Senior Editor

NEW YORK — IBM last week announced the strategy and some of the products that will take its venerable Systems Network Architecture into the next century.

IBM unveiled Advanced Peer-to-Peer Networking (APPN) for the mainframe and a networking blueprint that together will transform SNA into a high-speed, multiprotocol, any-to-any application communications service.

Users and industry experts greeted the announcement with enthusiasm, saying they were impressed with the strategies but would like the products delivered sooner.

"This announcement is easily the biggest communications step IBM has made in 10 years," said David Passmore, a principal with Ernst & Young in Vienna, Va. "It is the first step in moving SNA users down the transitional path to the new SNA."

That transition begins with the introduction of VTAM Version 4.1 for MVS, which includes APPN

support. It lets mainframes participate as APPN network nodes or end nodes, which will make direct access easier from any other

(continued on page 40)

IBM's APPN picture

Functions supported or planned for various platforms.

	LEN node	Network node	End node
MVS	✓	AN	AN
VM/VSE	✓	SOD	SOD
OS/400	✓	✓	✓
OS/2	✓	✓	✓
NS/DOS	AN	NA	AN
AIX	✓	AN	AN
37XX	✓	SOD**	NA
3174	✓	✓	NA
6611	NA	SOD	NA

✓ = Available

AN = Announced

** With VTAM

LEN = Low Entry Networking

NA = Not applicable

SOD = Statement of direction

SOURCE: IBM, WHITE PLAINS, N.Y.

GRAPHIC BY SUSAN J. CHAMPEY

Microsoft details new LAN Manager

By Margie Wylie
Senior Editor

SAN FRANCISCO — Reports of LAN Manager's death have been greatly exaggerated, according to Microsoft Corp. officials attending DB/Expo '92 here last week.

The next generation of the network operating system, LAN Manager for Windows NT, will ship alongside the Windows NT operating system as a separate product, the officials said. Both products are due by year end.

LAN Manager for Windows NT will extend the limited networking capabilities of the forthcoming Windows NT, which officials also discussed.

"There's a major difference between desktop server [soft-](continued on page 42)

NETLINE



IBI EXTENDS REACH into enterprise with support for new operating systems in EDA/SQL. Page 2.

BT BACKS OFF plans to offer Concert management system in U.S., but Concert-based service is in the cards. Page 3.

AT&T FINDS strong demand for its planned broadband SDN offering. Page 3.

RED BRICK FLINGS open data warehouse doors with DB/Expo product announcement. Page 3.

A DOZEN MORE vendors pledge their support for Big Blue's distributed database plan. Page 3.

MOTOROLA OFFERS radio modem technology to cellular carriers in effort to stay atop the wireless heap. Page 4.

FEATURE



DCE, DME will allow users to explore new net worlds

When the Open Software Foundation, Inc. (OSF) announced technology selections for its Distributed Computing Environment (DCE) two years ago, analysts said it would be a few years before users felt at ease with it.

Today, the DCE picture has come into sharp focus. Vendors are announcing products with DCE

support, and net managers are pioneering its use to develop distributed applications. Likewise, OSF's Distributed Management Environment for enterprise-wide network and systems management isn't far behind.

This week, *Network World* offers a closer look at the two technologies in stories beginning on pages 26 and 27.



Novell leaks product info at developers' conference

Topics include details on NetWare 3.2 and new product to connect NetWare clients to AS/400s.

By Caryn Gillooly
Senior Editor

SALT LAKE CITY — Novell, Inc. did not intend to reveal unannounced product details at its Brainshare '92 developers' conference last week, but nevertheless, users and vendors received glimpses throughout the week of future company products and directions.

At the conference here, Novell disclosed more details about NetWare 3.2 and discussed a new product that will connect NetWare clients to IBM Application System/400s.

Novell for the first time public-

ly referred to the next version of NetWare as Version 3.2 and said it plans to release three versions of the product: NetWare 3.2, NetWare 3.2 for OS/2 and NetWare 3.2 for AIX.

NetWare 3.2 and NetWare 3.2 for OS/2 will run on Intel Corp. machines, while NetWare 3.2 for AIX — IBM's version of Unix — will run on Reduced Instruction Set Computing-based machines, including IBM's RISC System/6000, said John Edwards, vice-president of marketing at Novell, based in Provo, Utah.

The three NetWare versions
(continued on page 4)

Proteon software upgrade allows universal bridging

Supports token-ring, Ethernet and FDDI LANs.

By Maureen Molloy
Staff Writer

WESTBOROUGH, Mass. — Proteon, Inc. next week will announce software enhancements that enable its bridge/routers to act as universal bridges capable of linking token-ring, Ethernet and FDDI LANs in virtually any combination.

The vendor is also expected to add Apple Computer, Inc.'s AppleTalk 2 and Banyan, Inc.'s VINES Internet Protocol to the list of protocols its CNX 500 and 4100+ bridge/routers support.

The enhancements will be embodied in Release 12 of the soft-

ware for those devices.

Proteon achieved universal bridging by enhancing its implementation of the source routing transparent (SRT) bridging standard. Dubbed Adaptive SRT, it will enable the vendor to bridge traffic between any combination of token-ring, Ethernet or Fiber Distributed Data Interface local-area networks. That will obviate the need to deploy LAN-specific bridges.

"It's expensive and very complex for users to install different bridges to handle every kind of network variation," said Charlie

(continued on page 41)

IBM's EDA/SQL reaches into enterprise with DRDA

By Timothy O'Brien
West Coast Bureau Chief

SAN FRANCISCO — Information Builders, Inc. (IBI) last week expanded its reach into the enterprise with a new version of its data access software and support for a number of new operating systems.

The new version, Enterprise Data Access (EDA)/SQL Release 2.0, includes support for elements of the firm's Distributed Relational Database Architecture (DRDA), improvements in SQL compatibility, better performance and a query analyzer tool that optimizes database access.

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Briefs

Europe backs GOSIP-like spec. The member states of the European Community last week endorsed Open Systems Interconnection in government procurement with the release of the European Procurement Handbook for Open Systems (EPHOS). The EPHOS buyer's guide instructs European government officials how to purchase X.400, X.25 and File Transfer, Access and Management (FTAM) products for new systems. The EPHOS guidelines are voluntary but are expected to be widely adopted.

Sprint to announce toll fraud monitoring service. Sprint Corp. this week will announce SprintGUARD Plus, a toll fraud monitoring service that carries a guarantee that Sprint will pay for toll fraud in excess of \$25,000 per incident per switch. The carrier will monitor use of its International Virtual Private Network, UltraWATS and Clarity services and notify customers of surges in international calling. The company will absorb the cost of toll fraud exceeding \$25,000 per switch with a ceiling of \$1 million per switch. The service carries a one-time \$100 activation charge and \$100 in monthly charges per switch.

Xerox unveils fax-to-PC software. Xerox Corp. last week announced software that enables users to control office computers from remote sites via facsimile machines. Xerox's new PaperWorks software will let users fax customized "smart paper" forms to personal computers outfitted with fax boards. The forms can be used to instruct the PCs to send, store and distribute documents. PaperWorks, developed by researchers at the Xerox Palo Alto Research Center, runs on Intel Corp. 80386- or 80486-based PCs under Microsoft Corp.'s Windows 3.0. It costs \$249.95 per copy and is available now.

Long hauler protests MCI contract win. Sprint Corp. last week officially protested a huge contract MCI Communications Corp. won earlier this month to upgrade the nation's aging air traffic control communications system. The new network, dubbed the Leased Interfacility National Airspace, is estimated to be worth \$856 million over 10 years if the Federal Aviation Administration exercises all of the renewal options. Sprint said MCI's offer did not meet the technical requirements of the contract and complained that the government failed to evaluate all offers on a common basis. AT&T said it is also planning to file a protest.

Multimedia demonstrations planned. Pacific Bell, Northern Telecom, Inc. and IBM have announced plans to jointly develop multimedia applications. The firms will trial the technology in the third quarter and demonstrate applications in the fourth quarter. The trials will involve Pacific Bell's Integrated Services Digital Network Centrex service, Northern Telecom's DMS 100 Supernode switch and IBM's Person-to-Person/2 desktop conferencing system.

Microsoft gobbles up database provider. In a move that will heighten competition in the personal computer database market, Microsoft Corp. last week announced that it has acquired Fox Software, Inc. in a stock swap valued at \$173 million. Microsoft said it will enhance the company's FoxPro database, which is available in stand-alone and local-area network versions, so it can serve as a front end to its high-end database server product, SQL Server. A Windows version of the database is under development.

CONTACTS



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BT repositions OSI mgmt. product as data net service

Concert IMS service to be offered from BT sites.

By Bob Brown
Senior Editor

SAN JOSE, Calif. — British Telecommunications PLC (BT) is backing off plans to offer an OSI-based integrated network management system in the U.S. and instead will use the technology to add a net management offering

premises and walk away," said Keith Willets, a product manager for BT in the U.K. and chairman of the Network Management Forum. "None of the vendors have sold many integrator-type boxes for network management. We've found customers to be more interested in a service-based tool,

"We've found customers to be more interested in a service-based tool."

▲▲▲

to its data network services.

BT unveiled its Open Systems Interconnection-based Concert Integrated Management System (IMS) two years ago as a CPE offering, but feedback from customers has persuaded the company to reposition the product as a service-based offering from its BT North America, Inc. and Syncordia Corp. subsidiaries.

"Based on our early customer trials, the feedback has been, 'Please don't dump a box on my

and I think you'll see other vendors recognize this."

While BT has installed Concert IMS at a few user sites in Europe and will do so at U.S. sites on request, the firm has turned most of its efforts toward pitching Concert IMS as a service, he said.

BT North America, which offers X.25 and frame relay services, will install Concert IMS at its management facilities by year end and begin testing a new service based on Concert IMS early

next year, according to Jim McWalters, a senior section manager for network management products at the company, based here. It will be the first real management tool for users of BT North America's value-added net, he said.

Syncordia was launched in Atlanta last year and uses Concert IMS to support its global network services.

Concert IMS runs on a Sun Microsystems, Inc. SPARCstation and an IBM RISC System/6000. But BT North America is waiting for Concert IMS to be ported to a fault-tolerant, Unix-based multiprocessor platform before installing it at its control center, McWalters said.

"The size of our network alone probably makes us the largest customer that Concert [IMS] will support for many years to come," he said. "We don't believe that the current Concert platform will be able to handle a fully integrated, fully controlled network of 4,500 nodes."

BT North America will implement the management service by installing Concert IMS at its primary control center here as well as its regional customer support centers, McWalters said. The regional systems will contain databases housing information about specific user networks nearby and will feed management data to the central Concert IMS.

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AT&T plans broadband SDN, sparks user interest

By Bob Wallace
Senior Editor

Large corporate users are keenly interested in a high-bandwidth service AT&T has on the drawing board called Software-Defined Broadband Network (SDBN) that, if deployed, would be able to carry voice, data, video and image traffic.

According to AT&T documentation being used in a customer needs analysis, SDBN would use Asynchronous Transfer Mode (ATM) cell relay technology and be built on a Synchronous Optical Network transmission infrastructure. The offering would be available in three versions: Data SDBN Service, Multimedia SDBN Service and Voice-Only SDBN Service.

Data SDBN would support data and image applications and provide for the migration of private-line networks to hybrid nets. Multimedia SDBN would support applications containing any combination of voice, video or computer data that require real-time interaction, while Voice-Only

SDBN would simply be a more feature-rich version of the company's current SDN voice offering ("AT&T laying plans for broadband SDN," NW, March 23).

SDBN could be launched as early as 1995, according to the documents.

Although it is not known how much interest AT&T's analysis is turning up, users queried about the need for such services said they could use the service if it were available today to support everything from local-area network interconnection to disaster recovery.

"This is an exciting and promising service," said Len Evenchik, director of communications for the Commonwealth of Massachusetts. Evenchik is building a private T-3 network for the state. "We could use SDBN now for bulk file transfers, imaging and disaster recovery."

Evenchik said he would consider using SDBN to supplement the state's existing private network for some applications. "I couldn't really say how much we

would shift to SDBN until I got an idea how widely the service would be offered and what kind of pricing structure it would have."

Users said that if AT&T decided to offer the service, they would like it rolled out nationwide in one fell swoop, rather than making it available piecemeal as it did with its Integrated Services Digital Network Primary Rate Interface service. "This is a different situation. I think there would be more than adequate demand for [SDBN]," Evenchik said.

Wide deployment is a critical issue to Dan Gonos, telecommunications manager for Domino's Pizza, Inc. "I see tremendous potential for this service here in the U.S. and in other countries," he said. "If it's priced attractively, we'd get more bandwidth and save money by replacing point-to-point private lines."

Nick Lippis, a principal with Strategic Networks Consulting, Inc. in Rockland, Mass., said, "There's no doubt that [a service like] SDBN would cannibalize AT&T's installed private lines. But private lines aren't where the high [profit] margins are. They are with virtual data services, which cost less to maintain and support."

(continued on page 41)

DEC, Red Brick announce separate database wares

By Jim Duffy
Senior Editor

SAN FRANCISCO — Red Brick Systems last week unveiled server software for storing and accessing information in enterprise-wide databases.

At the DB/Expo '92 show here, Red Brick, a Los Gatos, Calif., developer of database access software, brought out a so-called data warehouse that the firm says expands on IBM's Information Warehouse scheme by supporting faster queries and commands delivered in simple language.

Red Brick Warehouse products run on a Digital Equipment Corp. VAX server and are intended to provide easy querying of corporatewide database management systems from personal computers, terminals and workstations. The main benefit of the offering, according to the company



ny, is that Red Brick Warehouse allows rapid reply from the database back to the desktop.

Red Brick Warehouse comprises three software components: the server, for sending data to the querying desktop; the loader, for retrieving data from remote databases; and the RISQL

Entry Tool that provides desktops with access to the Red Brick server.

The company embraces IBM's Information Warehouse framework, a blueprint for storing and accessing data from anywhere in an enterprise, but redefines the component that details how data is formatted, merged and stored in the database management system.

Cynthia Ringo, Red Brick's vice-president of marketing and sales, said her company took that tack because IBM failed to address two problems when it out-

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Vendors rally around IBM distributed DBMS strategy

Support grows for DRDA, new products ship.

By Barton Crockett
Senior Editor

SAN FRANCISCO — IBM's Distributed Relational Database Architecture (DRDA) got a boost last week as 12 more vendors pledged to support the strategy and IBM announced that key DRDA features are shipping or will soon debut.

IBM said the ground swell of support from vendors, including Cincom Systems, Inc. and Information Builders, Inc. (IBI), indicates that Big Blue's architecture for linking disparate relational database management systems is quickly becoming a de facto industry standard.

Technically, the architecture is also advancing. IBM said it is delivering a new version of DB2 with support for a key DRDA concept, dubbed Remote Unit of Work (RUOW), that enables an application or DBMS to read and write data from one remote DBMS at a time.

Additionally, some of the vendors that jumped on the DRDA bandwagon last September announced delivery dates for DRDA support. Among them was Computer Associates International, Inc., which said it will support

RUOW on its flagship DBMSs, as well as on application development tools and utilities in six to nine months.

IBM's announcements were made at DB/Expo '92 here. DRDA is a key component of the Information Warehouse, IBM's blueprint for enterprise-wide data access.

Other new DRDA supporters include BrownStone Solutions, Inc., DataEase International, Inc., Enfin Software Corp., Fortis Development Corp., Intelligent Environments, Inc., Must Software International, Open Books, Inc., Object Technology International, Inc., the Dylakor Division of Sterling Software and XDB Systems, Inc. For some of these companies, DRDA support was expected.

IBI, for example, makes Enterprise Data Access/SQL, a cornerstone of Information Warehouse that lets IBM relational DBMSs read data on nonrelational DBMSs and relational DBMSs that do not support DRDA.

Other vendors, such as Must Software, are incorporating DRDA support into application development tools.

(continued on page 4)

Motorola bids to create wireless data net standard

By Wayne Eckerson
and Anita Taff
Network World Staff

SCIAUMBURG, Ill. — In an effort to stay atop the rapidly growing wireless data market, Motorola, Inc. last week said it will offer its radio modem technology to cellular carriers that want to support high-speed data communications on their networks.

In addition, Motorola said it will license its proprietary radio protocols — Mobile Data Communications and Radio Data-Link Access Protocol (RD-LAP) — to other manufacturers free of charge. This will allow other companies, such as chip makers and modem manufacturers, to build radio modems that can be used with ARDISNET, a nationwide radio net operated by ARDIS Co., a joint venture between Motorola and IBM.

Currently, Motorola is the sole supplier of ARDIS-compatible radio modems to makers of laptop, hand-held and other portable computers.

By opening up its radio technology, Motorola hopes to establish its radio protocols as a de facto standard for transmitting data across wireless networks, according to Jeff Morris, vice-president of marketing for Motorola's Land

Mobile Products Sector.

He said the company has spent the past six months talking about using its radio technology with cellular carriers. Although some were intrigued by the idea, none have actually signed on.

Although current cellular nets can support data, the largely analog, circuit-switched nets are not well suited for the task because they are prone to interference and handoff problems. Motorola is offering to help cellular carriers build radio data networks on top of existing cellular nets, Morris said.

The packet networks would incorporate RD-LAP, support speeds up to 19.2Kbit/sec and be based on Motorola's DataTAC architecture, which defines the layout and interconnection of base stations, net control processors, message switches and network management.

Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill., said Motorola opened its radio technology to try to dissuade cellular carriers from adopting competing technology.

Also, Motorola did not want to give OEMs any reason to work more closely with RAM Mobile Data, which runs Mobitex, a new mobile data net that is ARDIS' main competition.

Ironically, Motorola's announcement occurred at the same time five local exchange carriers that provide cellular service announced they would be teaming up to evaluate technologies for transmitting data over cellular nets.

Those carriers are Ameritech Mobile Communications, Bell Atlantic Mobile Systems, Contel Cellular, Inc., GTE Mobilenet and Nynex Mobile Communications Co.

Morris said Motorola has had discussions with each of the five cellular carriers but that the timing of the announcements was coincidental.

Chuck Napier, manager of new business development for GTE Mobile Communications, said one of the solutions the group will evaluate is upgrading cellular networks to digital and using packet-switched technology to carry data.

Packet switching, which has built-in error checking capabilities and provides retransmission of lost data packets, would solve many problems resulting from carrying data over cellular networks, according to Napier.

Whichever transmission method is chosen, the five cellular providers will hand off data to one another over the terrestrial network, as is currently done with voice, he added. The group will also look into the hardware and software needed to support applications on the cellular networks. □

AT&T, MCI set to launch SMDS

continued from page 1

vice will be available on both a local and long-distance basis.

MCI may not be far behind. "We have some interest from large customers and will probably be doing trials [this year] with a couple of them and various RBOCs," said Mark Sitko, senior manager of data marketing at MCI. "We will deploy SMDS as the market warrants."

He indicated that the carrier did not want to roll out SMDS too soon after frame relay because "we didn't want to confuse the marketplace." MCI announced frame relay last June.

Pieces in hand

SMDS, based on the 802.6 standard, is a switched high-speed digital service capable of supporting transmission speeds between 1.54M and 155M bit/sec. The service is expected to provide users with a less costly and more flexible alternative to private lines.

AT&T has all the necessary equipment in place to support SMDS. AT&T Network Systems'

Broadband Networking Switch (BNS)-2000 cell relay switch — announced in October 1990 and scheduled for commercial availability in June — will likely be used to provide SMDS, according to AT&T sources.

Several RBHCs, including BellSouth Corp., Nynex Corp. and US West, Inc., are conducting SMDS trials with an early version of BNS-2000, Release 0.

AT&T also has a customer premises version of its cell relay switch, dubbed BNS-1000, and the carrier is marketing routers with SMDS support from Wellfleet Communications, Inc. under its own brand name, LCS 200.

MCI also has the equipment necessary to support SMDS since it is using cell relay switches based on the 802.6 SMDS standard to provide frame relay.

Like AT&T, MCI is purchasing SMDS routers from Wellfleet.

Sitko declined to specify when MCI will roll out SMDS. "It's not like we have to go out and invest in a bunch of new equipment, so one likely scenario is [to] do it for a handful of customers and have a somewhat limited service," he said. "We could roll it out with dedicated access tomorrow." □

AT&T is participating in an SMDS showcase at the ICA show this year, leading to speculation by industry observers that the carrier may announce support for the service there. AT&T is providing its BNS-2000 switch, its LCS 200 router and a long-distance link between the ICA show and an SMDS network running at INTEROP 92 Spring in Washington, D.C. the same week.

Sources say that the RBHCs and Bell Communications Research, the research arm of the RBHCs that developed the SMDS standard, are pushing long-haul carriers to support the service.

Frank Gratzer, an executive director at Bellcore, said the local carriers are aiming for nationwide SMDS early next year, but for that to happen, "we need announcements [from long-distance carriers] soon."

Besides the possible announcement this year by AT&T and MCI, other major long-distance carriers have shown little eagerness to plunge into SMDS. Instead, they are cultivating users for their frame relay services and sitting on the sidelines, waiting for market demand to develop for SMDS. □

Vendors rally around strategy

continued from page 3

"DRDA is quickly becoming a de facto standard," said Shaku Atre, president of Atre, Inc., a consulting firm in Rye, N.Y.

IBM also fleshed out its own DRDA offerings last week by announcing that DB2 Version 2 Release 3 for MVS/ESA, which supports RUOW, is shipping now.

Previously, IBM only supported RUOW on the OS/400 Database Manager for its Application System/400.

In June, IBM plans to ship RUOW support on a new version of SQL/DS, its mainframe relational DBMS for VM and VSE. IBM will also ship RUOW on its OS/2 Extended Edition Database Manager in April, according to an IBM spokesman.

IBM supports the first DRDA component, Remote Request, on

its key DBMSs. Remote Request enables an application or DBMS to read data from a remote DBMS. Other DRDA features under development are the Distributed Unit of Work and the Distributed Request. The Distributed Unit of Work will enable an application or relational DBMS to simultaneously read and write data from multiple DBMSs. It will support a two-phase commit protocol, which provides distributed DBMS integrity by ensuring that updates are completed on all DBMSs in a net.

The Distributed Request will enable applications to read and write data on distributed DBMSs without specifying where the data is located.

The IBM spokesman declined to say when Distributed Unit of Work and Distributed Request will ship. Atre predicted IBM will begin supporting Distributed Unit of Work in two to three years. □

NW, March 9).

Users seemed most impressed with NetWare 3.2 imaging capabilities. "This is by far the most exciting new thing I've heard at [here] so far," one user said.

Novell stuck to its claims that NetWare 3.2 will be available by year end, but Edwards said software development kits for the new network operating system would be available midyear.

In a session on the Novell-IBM relationship, D'Eath also discussed a new product Novell is expected to announce this week that will let NetWare clients access information residing on IBM AS/400 minicomputers.

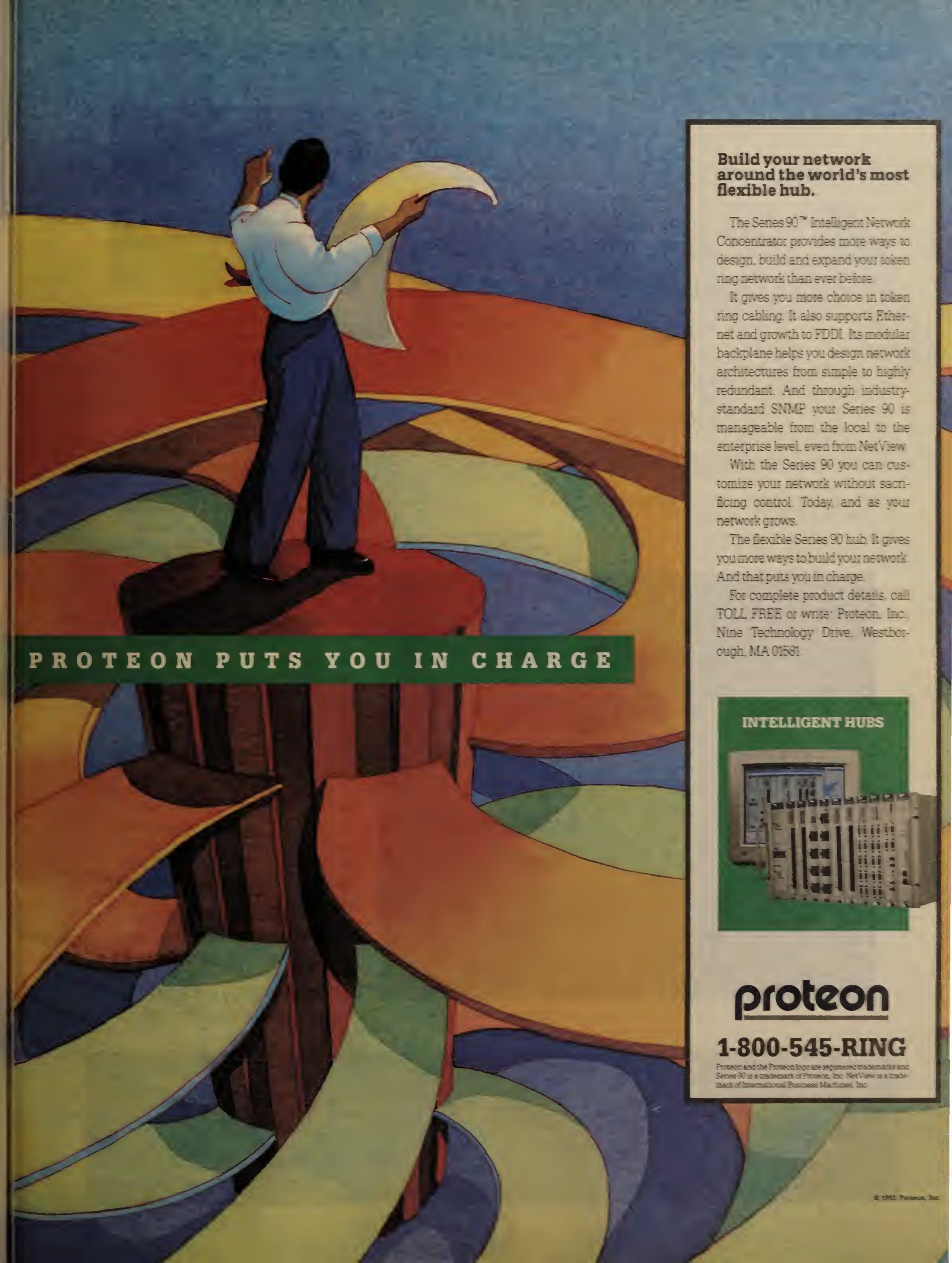
The product, to be called NetWare Router for AS/400 PC Support, will have two parts, according to Tom Miller, a Novell software engineer. One part will be a terminate-and-stay resident (TSR) program for workstation clients, while the other part will be an NLM that will work in conjunction with Novell's NetWare for SAA.

Together, the two sections will provide full 5250 terminal-emulation and file-transfer capabilities, in addition to letting the NetWare client print on AS/400-based servers.

Although Miller said the product would be available this week, no pricing was available.

Lastly, Novell said it plans to offer its current NetWare Access Server product as an NLM in the near future. Currently, NetWare Access Server, which provides remote users with asynchronous access to a NetWare local-area network, is software that must reside in a separate machine on the NetWare LAN. □





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UDS LanFast™ network modem puts your node on the road



Access to local area networks now extends well beyond the office walls, thanks to the new LanFast DM 20 from UDS.

The LanFast DM 20 is a LAN-resident dial-in/dial-out device, with a built-in V.32 bis/V.42 bis modem and Ethernet LAN adapter card. Its presence on a Novell LAN enables your "road warriors" to access the network, using a standard modem, from any place that offers a standard telephone jack.

The unit supports thick, thin or 10BaseT Ethernet, giving remote users and local nodes the same access to E-mail, shared databases and other network resources. Three levels of security deny access to unauthorized users, and a second high-speed serial port extends network reach by accommodating an external modem or high-speed digital device.

LanFast DM 20 is shipped with all necessary hardware and software. For remote access, it supports standard modems at speeds to 57.6 kbps and popular communications programs such as Procomm Plus Network and Crosstalk Mk. IV.

If your people on the move need everyday access to their home-base LANs, let them take a node on the road. For full details, contact UDS at:

800/451-2369.

UDS
MOTOROLA

DATA NET ARCHITECTURES

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Worth Noting

"Customers are interested in frame relay access devices for the same reason they were interested in stat muxes 10 to 15 years ago. They can save one-third of the [telecom charges]."

Richard Henkus
Technology marketing manager
Gandalf Systems Corp.
Cherry Hill, N.J.

Vendors vow to develop products based on OSI TP

Believe standard will encourage OSI adoption.

By Jim Duffy
Senior Editor

HANNOVER, Germany — British mainframe giant ICL and Unix Systems Laboratories, Inc. (USL) have announced their intention to develop standards-based products that enable transaction processing systems to interoperate in a network.

The companies said they will develop products that conform to the International Standards Organization's Open Systems Interconnection Transaction Processing (TP) profile. OSI TP promises to provide a standard protocol for linking heterogeneous transaction processing systems and eliminate the need for proprietary gateways.

"There's no other way to do this except through proprietary protocols," said Terry Dwyer, USL manager for Tuxedo Systems, which is USL's transaction management system.

The vendors said they believe OSI TP will boost market appeal and encourage the adoption of OSI for multivendor interoperability.

Until now, OSI has been lagging, due in part to the resilience of the Transmission Control Protocol/Internet Protocol.

"There's no transaction processing protocol for TCP/IP," Dwyer said. "For interoperability [between transaction processing systems], there is only one standard, and it's OSI TP. It's a very important protocol, and we think it will bring a lot of people to OSI."

Analysts said OSI TP is a must for companies such as USL and ICL that are espousing open transaction processing strategies.

"This is just another step along the transaction processing system interoperability line," said John Morrell, analyst at International Data Corp. in Framingham, Mass. "If vendors are not implementing [OSI TP], people won't even consider their products in the future."

The agreement calls for ICL to provide USL with a core OSI TP protocol engine. USL will develop

(continued on page 8)

TI software keeps net in sync with Father Time

By Jim Duffy
Senior Editor

DALLAS — Texas Instruments, Inc. has found a painless way to keep pace when Father Time springs ahead and falls back every year.

The company developed software that allows networked computers to automatically synchronize their internal clocks when time is adjusted twice a year for daylight-saving time. Called Dynamic Time Change (DTC), the software enables computers on TI's worldwide IBM IMS-based on-line transaction processing network to slow down or speed up their internal clocks to keep pace with time changes.

DTC, which runs on IBM MVS mainframes, is used twice a year to either make one second take two seconds or vice versa. That allows the network to "hopscotch" its way in and out of daylight-saving time by processing

transactions at half time or double time.

Falling way back

The clocks in an IMS network can spring forward with little trouble, according to TI. However, falling back an hour can make the entire network fall behind.

If the internal clocks on the IMS systems are simply set back one hour to accommodate an autumnal time change, transactions queued for a specific time can run into problems.

If, for example, a transaction is queued for 2 a.m. and the computers' clocks are set back one hour, the task may collide with another transaction queued for 1 a.m., thus upsetting the sequence of the job, TI said. Or, if the IMS system recognizes transactions out of sequence — in this case, a transaction queued for 2 a.m. and then one immediately following

(continued on page 8)

Data Packets

AT&T Paradyne last week unveiled software for its Acculink multiplexers that the company claims will provide users of fractional T-1 services with routing and management capabilities that are common to full T-1 lines.

The software, called Advanced Fractional Networking (AFN), allows users to detect and recover failures on fractional T-1 lines, a capability usually associated only with full T-1 circuits.

The software also offers attribute routing, a feature that allows users to partition network bandwidth for better control of its usage.

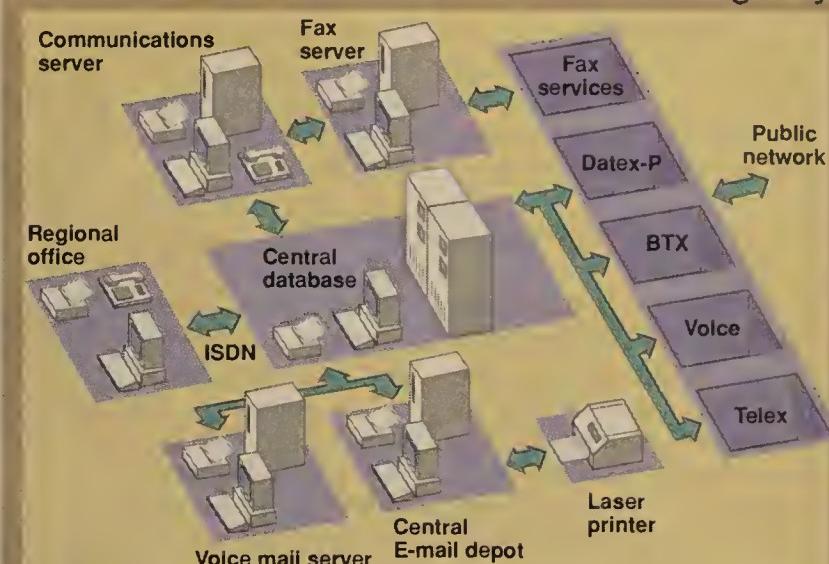
In addition, the product includes features that let users specify the optimal route that data should take on an application-by-application basis.

AFN is priced between \$1,325 and \$2,500 for current Acculink customers wanting to upgrade their devices. It will be available in the second quarter.

Network Software Associates, Inc. next week will unwrap software that enables personal computers running IBM's OS/2 2.0 operating system to conduct high-speed file transfer

(continued on page 8)

ISDN makes the connection for German agency



The Ministry for Interior Affairs for the German State of Schleswig-Holstein uses ISDN to link users in regional offices to a centralized database, as well as to voice and data services.

SOURCE: SCHLESWIG-HOLSTEIN'S MINISTRY FOR INTERIOR AFFAIRS, KIEL, GERMANY
GRAPHIC BY SUSAN SLATER

German ministry taps ISDN benefits

ISDN links enable remote office users to easily tie into Schleswig-Holstein's central data center.

By Salvatore Salamone
Features Writer

KIEL, Germany — Although ISDN has yet to take hold in the U.S., European users such as the Ministry for Internal Affairs for the German State of Schleswig-Holstein are employing it as a key data network technology.

Schleswig-Holstein has built an Integrated Services Digital Network/X.400 net to link all ministry and public administration facilities, many of which are in small towns, to the state's main data center.

ISDN links support access to a central database of documents and records, as well as network-wide printing, voice mail, electronic mail and telex. The technology also allows the state to provide these services for about the same price as slower speed alternatives.

Schleswig-Holstein is not alone in the use of ISDN for data communications. According to Telecomeuropa, a Bath, England, market research firm, the use of technology is growing in Europe.

For example, the number of B channels used in France increased from 25,000 at the end of 1990 to 150,000 by the end of last year. During the same period, the number of B channels being used by Deutsche Bundespost Telekom customers increased

from 58,000 to 256,000, according to Telecomeuropa.

ISDN in France is primarily used for data communications, most of which are personal computer-based, the company said.

That trend also extends to linking local-area networks. "ISDN is the only economical way of linking LANs over wide areas," said Horst Nasko, vice-president of Siemens Nixdorf InformationsSysteme AG. "All other broadband links are too expensive." The Schleswig-Holstein Ministry, for example, ruled out X.25 for the same reason.

The Ministry for Interior Affairs uses its ISDN net to let users at regional offices, which are spread throughout the Schleswig-Holstein region, tap the ministry's central database for information such as job openings, unemployment documentation and unemployment payment records.

Users in the remote offices can click on icons at their Unix-based workstations to print documents networkwide and have access to services such as voice mail, E-mail and telex.

Additionally, it provides ties into commercial on-line services, such as Datax-P and BTX, a German information exchange service. Users can also send and receive facsimiles via a communication

(continued on page 8)

Firm takes on McDATA, IBM in connectivity battle

Interlink offering connects LANs to mainframes.

By Michael Cooney
Senior Editor

FREMONT, Calif. — Interlink Computer Sciences, Inc. last week entered the burgeoning market for devices that connect LANs to mainframe channels with the introduction of its 3762 Network Controller.

The 3762 is a mainframe channel-attached gateway for token-ring, Ethernet and, later this year, Fiber Distributed Data Interface local-area networks. The box can connect two Ethernets or any combination of two different LAN types to a single mainframe channel.

The 3762 is targeted at users that want to make the IBM mainframe a peer node on a Digital Equipment Corp. DECnet network. "Users who have DECnet and TCP/IP want the mainframe channel-connected for high-speed, high-volume applications," said Steve Milligan, product manager for the 3762. "Those types of Ethernet users have traditionally needed this type of connection, but this product also addresses the increasing requirement for token-ring con-

nnectivity."

The product is based on a Reduced Instruction Set Computing-based hardware platform built by Bus-Tech, Inc. of Burlington, Mass.

A direct competitor to IBM's 3172 Interconnect Controller and McDATA Corp.'s 6100 Network Gateway Server, the 3762 is entering a relatively new, but quickly growing market.

According to International Data Corp. (IDC), a research firm in Framingham, Mass., LAN-to-mainframe controller vendors are reporting 50% increases in orders for the boxes. Sales climbed to more than \$42 million last year and are expected to exceed \$125 million by 1996, IDC reported. But the picture is not entirely rosy.

"While increasing numbers of customers are installing PC LANs and showing an interest in TCP/IP, the 3172 and competitive products do not yet match traditional SNA network products in terms of reliability and administration," said Rick Villars, an IDC analyst.

"Still, the Interlink product

represents the growing LAN user mentality to move away from front-end processor-attached LANs to channel-attached connections," he added.

Interlink expects the 3762 will increase sales of its Systems Network Architecture, DECnet, Transmission Control Protocol/Internet Protocol and Network File System mainframe connectivity software. The box will also work with IBM's mainframe TCP/IP software.

The McDATA and IBM controllers contain more overall features than the Interlink box. For example, the 3762 is not manageable by NetView or DEC's DEC Management Control Center Di-

rector. Still, competitors look at the 3762 as a legitimizer of the LAN-to-mainframe channel connection market and a welcome high-performance alternative for users.

"Interlink's older controller products provided some of the best LAN-to-host gateway performance in the marketplace, and the new controller should follow that tradition," said Brian Witt, group product manager for McDATA's systems products.

The 3762 will be sold as a unit with the LAN boards in the second quarter for \$22,000. FDDI support will be available later in the year, but prices for the FDDI upgrade were not released. □

Ministry taps ISDN benefits

continued from page 7

There are 324 users network-wide tied into the Schleswig-Holstein Ministry's network. Each user has a Siemens Nixdorf WX 200 Unix-based workstation supported by a single 64K bit/sec channel of an ISDN Basic Rate Interface (BRI) line, while the other BRI B channel is used for telephone service.

Each workstation runs 3270 and BTX terminal-emulation software, providing access to IBM hosts and the BTX electronic information exchange.

By running a Siemens Nixdorf application called WorkParty, users can access electronic folders of information stored locally and at the data center in order to answer queries and update records.

Workers can create a document locally with a word processing package and open an electronic folder of documents stored at the ministry's main computer facility in Kiel by clicking on the icon for a document stored elsewhere. The workstation will then establish an ISDN link to that resource and transmit and store the new document as part of that folder.

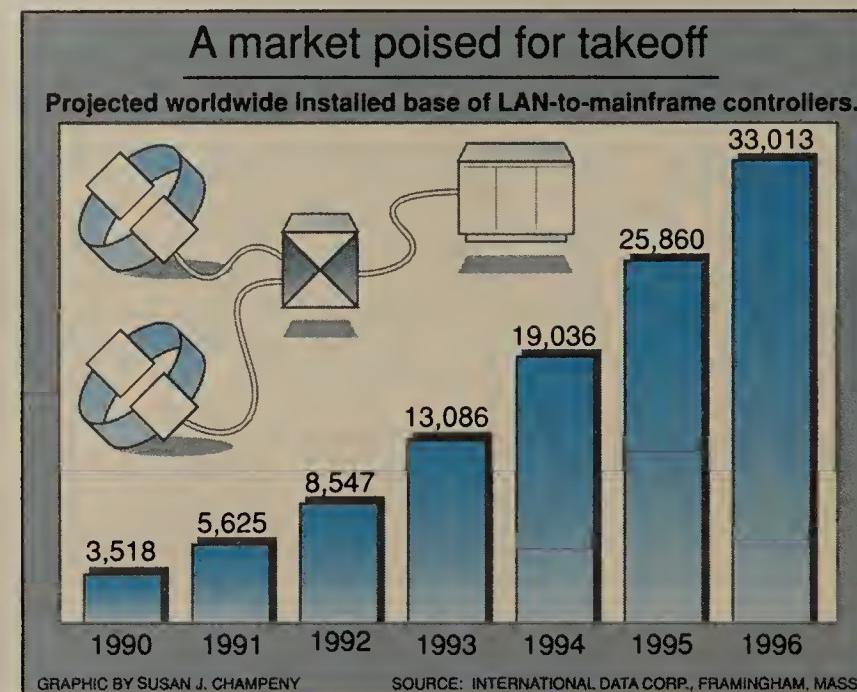
Users can also open folders, pull relevant documents and create new folders, which can be sent to one or more users on the network. The application has auditing and security features to prevent folder contents from being read by unauthorized personnel.

For example, the sender can assign a maximum date of validity, after which delivery of the folder is not permitted.

The workstations also run application software that allows creation of E-mail and faxes. "This eliminates the need for multiple terminals at each desk," said Hans-Gunter Silber, manager of the ministry's networking staff. "We don't have a pile of terminals sitting around — just one."

ISDN is the key to providing the ministry's regional offices with access to all of these communications services. The ministry used ISDN because it worked over existing lines, whereas some alternatives would not. "We could connect all the offices at once over the digital public network," said Sabine Eisele, a member of the ministry's technical staff.

Some users might argue that the 64K bit/sec rate offered by ISDN B channels is too slow for data communications, but Siemens Nixdorf's Nasko said it is better than the alternative. "It is much faster than 19.2K bit/sec dial-up connections with modems," which is Europe's other similarly priced alternative. □



Vendors plan OSI TP products

continued from page 7

a gateway that incorporates OSI TP into its Open Networking Platform seven-layer OSI protocol stack.

ICL will bundle the gateway into its Open Systems Transaction Management product line, including USL's Tuxedo System on Unix and ICL's Transaction Processing Management System (TPMS) on its proprietary VME mainframe operating system.

TI pack keeps net in synch

continued from page 7

it queued for 1 a.m. — it will abort the job.

The only other alternative for synchronizing the network is shutting it down for an hour, according to Gary Sprehe, vice-president for information services in TI's Information Systems & Services group. But that costs money.

"That hour is significant," Sprehe said. "It gives us an opportunity to generate hundreds of thousands of dollars in revenue."

TI uses DTC for internal use

USL will also upgrade its Tuxedo System /T transaction processing manager with the gateway.

USL and ICL expect to have OSI TP-compliant products available in early 1993. Recently, the vendors demonstrated interoperability between their respective Tuxedo and TPMS systems at the Hannover Fair CeBIT here.

OSI TP is currently an ISO Draft International Standard and is expected to be ratified as an International Standard next month. □

only to synchronize its worldwide IMS network, which links 63,000 employees, more than 75,000 terminals, 22 mainframes, 44 manufacturing sites, 296 sales and service facilities in 30 countries, and 1,700 customers and suppliers.

The network is connected by fiber-optic, satellite, microwave and leased-line circuits worldwide and processes about 8.4 million transactions daily.

But the company said it will make the software commercially available in the future. TI is talking to software firms about re-marketing DTC and is also considering selling it direct, Sprehe said. □

Data Packets

continued from page 7

transfers with IBM hosts.

The software, called AdaptSNA RJE, lets a PC emulate an IBM 3770 terminal and conduct remote job entry batch file transfers with IBM hosts running a variety of operating systems. It supports multiple LU Type 1 sessions, unattended operation, automatic data compression, file-naming flexibility, user-defined function keys and an application program interface.

OS/2 2.0 is IBM's 32-bit operating system, optimized for Intel Corp. 80386SX and higher performance workstations.

AdaptSNA RJE is priced at \$785 and will be available next week.

SunGard Recovery Services, Inc. expanded its ability to support Stratus Computer, Inc. users by installing a Stratus XA2000-230 processor at its Philadelphia disaster recovery facility.

The new processor will sit beside the Stratus XA2000-110 and XA2000-120 computers already resident at the hot site. The installation of the processor more than doubles SunGard's previous Stratus recovery capability, the

company said.

The 200 series models are the most recent versions of Stratus' XA2000 processors.

In addition to the Stratus processor, the Philadelphia hot site houses disk drives, streaming tape drives, printers, terminals and communications ports for service subscribers.

AT&T Network Systems last week said it has sold its CompuLert computer system administration software to Tone Software Corp., an Anaheim, Calif., supplier of automation software for the IBM MVS market.

Terms of the sale were not disclosed.

CompuLert centralizes the overall data operations and maintenance of multiple systems onto a single workstation. The software was initially developed to monitor Unix-based systems but has since been extended to support a variety of operating environments.

Tone will port CompuLert onto other hardware platforms in addition to MVS and Unix.

CompuLert is currently deployed in 200 sites worldwide, including within the AT&T network, the regional Bell holding companies, and government and commercial markets. □

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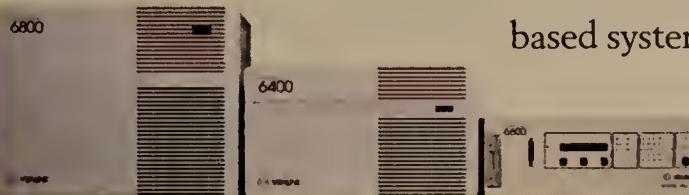
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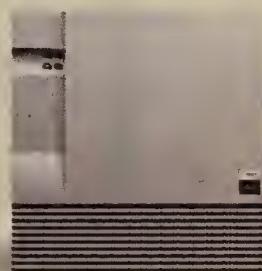


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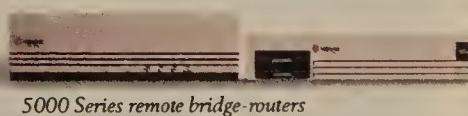
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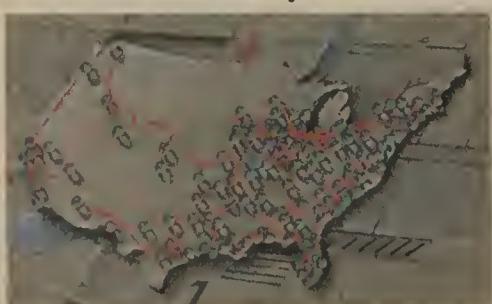
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LOCAL NETWORKING

LAN HARDWARE, NETWORK OPERATING SYSTEMS AND LAN MANAGEMENT

Worth Noting

"With luck, we'll have Windows NT on NetWare by the July Microsoft [Corp.] developers' conference, at least in demo."

Steven Ballmer
Vice-president
Microsoft Corp.
Redmond, Wash.

Netnotes

Managers of IBM LAN Server and Microsoft Corp. LAN Manager networks can now schedule processing jobs to run unattended, thanks to the **Vinzant, Inc.** Event Control Server, which shipped last week.

At \$995 per server, the Event Control Server is a dedicated DOS network workstation that can be configured to execute jobs, such as payroll processing or mail merges, without user intervention. The product works by executing DOS batch files or DOS commands within the parameters specified by a manager. Parameters include factors such as when a job will run or in what order it will run in relation to other jobs.

There's more than one way to get a Macintosh on your Novell, Inc. NetWare network, according to **Miramar Systems, Inc.** and **Dayna Communications, Inc.**

The Macintosh-to-personal computer connectivity companies recently started shipping products that let Macintoshes tap into Novell nets without making changes to the NetWare server.

MACLAN Connect for NetWare from Santa Barbara, Calif.-based Miramar, is a gateway that works by turning a PC node on a NetWare network into an Apple Computer, Inc. AppleShare server. Mac-

(continued on page 12)

DG software lets AviONs act as Apple DAL servers

Supports Oracle, Informix, Ingres databases.

By Margie Wylie
Senior Editor

WESTBOROUGH, Mass. — The latest convert in Apple Computer, Inc.'s crusade to standardize desktop-to-database access, Data General Corp. has announced it will offer a Data Access Language (DAL) server for its Reduced Instruction Set Computing-based AviON systems.

DAL is Apple's solution for moving information stored at hosts down to microcomputers in a way that is transparent to both the user and programmer.

DAL's client software, running on Apple Macintoshes, DOS or Windows personal computers, lets applications access a variety of databases on any host running DAL server software. Developers can write applications that access any DAL-compliant database through DAL's application pro-

gram interface.

DG's DAL server software will let DAL-compliant applications access data stored in Oracle Corp., Informix Software, Inc. and Ingres Corp. databases running on the AviON servers.

As the first Unix-based DAL server to support Apple's AppleTalk, DAL for AviON can be combined with DG's OpenMac products to let the AviON act as a multipurpose server in a Macintosh network, according to DG. OpenMac software lets an AviON machine act as an AppleTalk Filing Protocol-compatible file and print server.

DAL-compatible applications are currently available exclusively on the Macintosh, where the DAL client has been a standard component of systems software for some time.

(continued on page 12)

Intel is latest to unveil software-based analyzer

By Margie Wylie
Senior Editor

HILLSBORO, Ore. — Network analysis tools offer their owners a touch of elitism, not only because they are terribly expensive, but also impossibly cryptic.

However, the idea that analyzers have to be either costly or enigmatic to be useful is slowly changing as more software-only analyzers, such as Intel Corp.'s recently shipped NetSight Analyst, come on the scene.

NetSight Analyst runs on almost any personal computer on an Ethernet, token-ring or broadband network and lets managers gauge network health by capturing and analyzing network traffic in an easy-to-understand format.

The analyzer decodes in real time the Transmission Control Protocol/Internet Protocol, Novell, Inc.'s NetWare Internetwork Packet Exchange (IPX), Microsoft Corp.'s LAN Manager, IBM's Network Basic I/O System Extended User Interface (NET-BEUI) and Apple Computer, Inc.'s AppleTalk packets.

The tool can also generate test traffic and offers some network

performance statistics.

The \$995 software package requires an Intel 80286 processor or above and comes on a single disk for easy portability.

The idea of a software-only network analyzer is not new. Several companies already offer the diagnostic tools as a less expensive alternative to systems that come with dedicated hardware.

The idea that analyzers have to be costly to be useful is slowly changing.

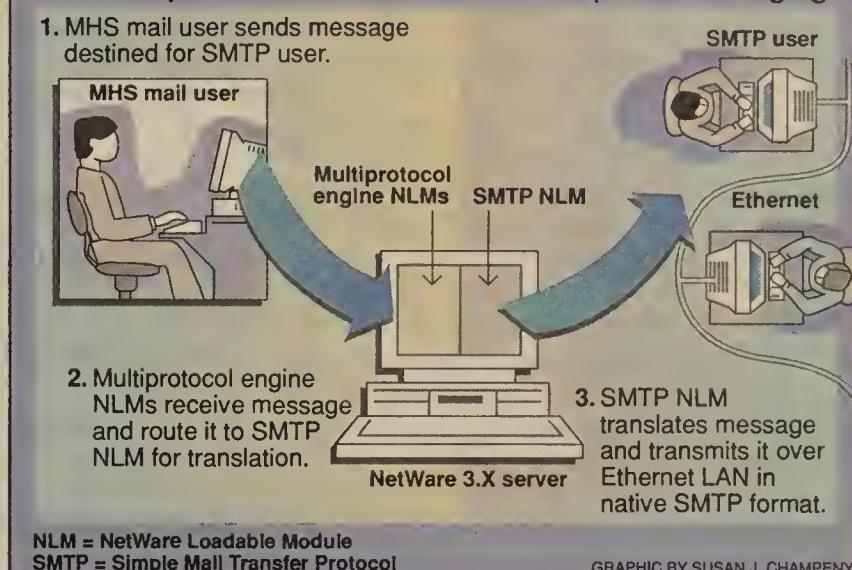


Some of the more recent and easiest to use entries in this category are available on the Apple Macintosh ("Options exist while Macs await SNMP," NW, March 23). Despite their economic appeal and portability, the soft-

(continued on page 12)

Using Novell's Global Messaging architecture

One example of how new architecture simplifies messaging:



GRAPHIC BY SUSAN J. CHAMPEY

Novell unveils grand NetWare E-mail plan

Multiprotocol engine connects different E-mail packs, eliminates need for multiple mail gateways.

By Caryn Gillooly
Senior Editor

SALT LAKE CITY — As expected, Novell, Inc. last week introduced its new NetWare Global Messaging (NGM) architecture, a strategy for allowing NetWare customers using different electronic mail systems to communicate without multiple gateways.

Introduced at Novell's developers' conference here, NGM consists of about 10 NetWare Loadable Modules (NLM) that make up a multiprotocol engine. This engine — in conjunction with additional NLMs — will let NetWare customers communicate more easily with users of E-mail systems based on the firm's own Message Handling System (MHS), X.400, the Simple Mail Transfer Protocol and IBM's Systems Network Architecture Distribution Services ("New message engine due for NetWare," NW, March 23).

At last week's conference, Novell also said it is currently developing an IBM Professional Office System NLM and is working on another NLM that supports Apple Computer, Inc.'s Open Computing Architecture, which is a collaborative application environment that includes messaging services.

Messaging director

Under NGM, Novell has basically separated the messaging engine from the messaging proto-

cols, which run as additional NLMs with the engine. Once in place, the engine will serve as a messaging "director," sending incoming and outgoing messages to the appropriate NLMs for format translation, then on to their destination using native protocols.

"This is not just a set of gateways," said Darryl Miller, executive vice-president at Novell, based here.

In addition to the multiprotocol support, NGM will also provide directory synchronization across multiple servers, ensuring that NetWare's user name database is distributed and updated across the enterprise. Currently, the list of user names is kept in Novell's Btrieve database.

However, with the release of NetWare 3.2 expected later this year, the names will be kept in the network operating system's distributed relational database, obviating the need to replicate the database on every server in a network ("NetWare 3.2 to reshape net landscape," NW, March 16).

"Distribution lists are an integral part of the new scheme," said Ed McHugh, software development manager of messaging engineering for Novell.

NGM will also have much-needed asynchronous communications support and an expanded hierarchical addressing scheme that routes messages more efficiently.

(continued on page 12)

German firm claims new FDDI concentrator will be price buster

By Ellen Messmer
Washington Correspondent

HANNOVER, Germany — Schneider & Koch & Company Datensysteme GmbH has announced a new low-cost Fiber Distributed Data Interface concentrator and added support for FDDI and token ring to its personal computer network interface card.

The company, based in Karlsruhe, Germany, markets its networking product line in North America through its Sarasota, Fla.-based subsidiary SysKnect, Inc.

Part of the strategy behind the Schneider & Koch's announcements, which were made at the recent Hannover Fair CeBIT show here, is to make inroads into the FDDI concentrator market through attractive pricing.

"A lot of concentrators are already on the market, but others are mostly high-priced," said Matthias Thorner, director of international operations for the company. Some FDDI concentrators range from

\$3,000 to \$5,000 per port, he said.

The Schneider & Koch 12-port concentrator, called the FDDI SK-Concentrator, will list at \$1,500 per port. The SK-Concentrator connects as many as 12 worksta-

The system is open, so if another protocol appears tomorrow, you just write the interface to DLI."

▲▲▲

tions directly to an FDDI dual-ring local-area network.

Besides selling it through SysKnect, the company said it is interested in form-

ing OEM relationships for the FDDI concentrator with other manufacturers.

Schneider & Koch has also added FDDI and token-ring support to its PC network interface card, which previously only supported Ethernet.

Thorner said the upgrade was primarily achieved by revising the company's adapter software. The software is designed with a proprietary Layer 2 implementation, called the Data Link Interface (DLI), which acts as a protocol handler for upper layer protocols.

The DLI protocol handler allows each PC adapter card to support such protocols as IBM's Network Basic I/O System Extended User Interface, Banyan Systems, Inc.'s VINES and Digital Equipment Corp.'s DECnet, in addition to Apple Computer, Inc.'s AppleTalk, Novell, Inc.'s Internet Packet Exchange (IPX) and the Transmission Control Protocol/Internet Protocol.

This wide range of protocol support is what Schneider & Koch calls its Universal Portable Protocol Stack. "The system is open, so if another protocol appears tomorrow, you just write the interface to DLI," Thorner said. □

Netnotes

continued from page 11

intoshes attached to the gateway access NetWare servers, the same as AppleShare servers. Both Macintosh and PC users can print to PostScript printers attached to the gateway, NetWare server or to the AppleTalk local-area network, according to Miramar. The software costs \$695 for 40 users.

Salt Lake City-based Dayna Communication's NetMounter utility gives users direct access to a NetWare server's file and print capabilities but does not include printing services or the limited administration capabilities available with Novell's own NetWare for Macintosh. NetMounter costs \$99 per user. Novell's solution retails for \$895 for 20 users on NetWare 3.X servers and ships at no charge with NetWare 2.X servers.

THEOS Software Corp. has shipped an updated version of its multiuser DOS operating system, THEOS + DOS 2.0.

Running on top of THEOS 386, the company's proprietary multiuser operating system, THEOS + DOS allows dumb terminals to share one 286 or 386 personal

computer as a DOS applications server.

THEOS + DOS 2.0 has been enhanced to support Microsoft Corp.'s DOS 5.0, allowing users to load device drivers and terminate-and-stay-resident (TSR) applications in high memory. Upgrades start at \$199 for the first nine users. □

Pack lets AviONs act as DAL servers

continued from page 11

DAL client software was released last year for DOS and Windows but, so far, has found little acceptance among application developers for those platforms. Microsoft Corp. has since announced its own database access technology, Open Database Connectivity (ODBC), which could further impede DAL's universal acceptance. In DAL's defense, however, developers point

out that Apple's method is available today, while ODBC is still under development.

The DG DAL server will cost between \$1,000 and \$6,000, depending on the AviON server type. Pacer Software, Inc. of La Jolla, Calif., also shipped a DAL server for Sun Microsystems, Inc. SPARCstations earlier this year. Prices for that server range from \$4,000 to \$12,000.

DAL servers are available from Apple and other development partners for Digital Equipment Corp. VAXes and IBM mainframes as well as other platforms. □

Novell unveils grand NetWare E-mail plan

continued from page 11

ciently.

NGM is expected to be a boon for larger customers whose corporate networks consist of a variety of environments, each with its own mail system.

The multiprotocol engine, which costs \$7,295 for 250 users, could obviate the need for expensive centralized mail systems from vendors such as Soft-Switch, Inc. or separate gateways for each mail system on the corporate net.

Who will benefit?

However, analysts — and even Novell — pointed out that customers without multiple E-mail environments will not really benefit from the new engine. These customers can expect many of the same directory synchronization and addressing enhancements that are so important to NGM to be included with the next release of MHS.

That release, MHS 2.0, will not be an NLM as some had expected, but rather an upgrade to the existing DOS-based software, according to McHugh.

"MHS has always been a DOS-based product, and it will always be a DOS-based product," he said.

Besides including directory synchronization capabilities similar to NGM's, MHS 2.0, which will be easier to install and administer than NGM, will have an interface more similar to other NetWare products. It will also use the same hierarchical work group scheme as NGM to determine how messages are routed throughout the network.

According to Novell officials, MHS 2.0 is expected to be available sometime this summer, soon after NGM.

NGM will begin shipping early this summer. It will be priced at \$1,095 for 10 users, \$2,895 for 50 users, \$4,895 for 100 users and \$7,295 for 250 users. □

Intel airs software-based analyzer

continued from page 11

ware-only analyzers are not likely to replace analyzers tied to dedicated hardware in the near future.

Since the applications rely on hardware — the network interface card — to capture network traffic, their performance may vary, depending on the machine on which they run. Dedicated hardware, on the other hand, can ensure that the software meshes intimately with the hardware and that packets are not dropped or corrupted, giving managers finer diagnostic accuracy.

Intel has also shipped an Ethernet version of its NetSight Professional analyzer, which includes its own network adapter.

The \$7,995 package uses menus and color-coded screens to help managers evaluate network traffic patterns and decode packets. The analyzer requires 4M bytes of memory and at least an 80386-based PC. It supports Open Systems Interconnection, NETBEUI, Digital Equipment Corp.'s DECnet, TCP/IP, Xerox Corp.'s Xerox Network Systems, IPX and AppleTalk, among other network protocols. □

Can You Tell Who's Using Teleglobe's New V.32bis Modem?



Teleglobe's DA 3214 modem is setting the industry ablaze with a line rate of 14.4 kbps over standard phone circuits, 57.6 kbps using V.42bis compression. But there's more to the DA 3214 than speed. No other modem performs better under adverse line conditions. And the DA 3214 is backed by Teleglobe's 20 years of communications experience. Call Teleglobe today at 1 800-926-3225 ext. 3200 or fax us at 1 508-681-0660.

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INTERNETWORKS

LAN-TO-LAN AND LAN-TO-WAN EQUIPMENT AND STRATEGIES

Worth Noting

"A router should be as easy to use as a compact disc player."

Tad Witkowicz
President
CrossComm Corp.
Marlborough, Mass.

Link Notes

Lyman Chapin, chief network architect for **BBN Communications Corp.**, has been named chairman of the Internet Activities Board (IAB).

IAB is the coordinating committee responsible for the design, engineering and management of the Internet. The board sets Internet standards and oversees operation of its two principal subsidiary task forces, the Internet Engineering Task Force and the Internet Research Task Force.

Bytex Corp. and **Gandalf Data, Ltd.** last week announced an agreement to incorporate Bytex's token-ring technology in Gandalf's Access Hub, an intelligent wiring hub.

As a result of the agreement, Gandalf will add Access Hub support by year end for multiple token-ring networks and the capability to switch traffic among modules.

The Access Hub had previously been limited to supporting 10Base-T Ethernet modules as well as Ethernet bridges and routers, and did not have a module-switching capability.

As part of the agreement, Gandalf will also resell Bytex's Series 7700 Intelligent Switching System hub under a private label.

Eicon Technology has announced its Router for OS/2 that will enable users to route both Microsoft Corp. (continued on page 14)

New Chipcom tools help Online hub manage itself

New software, modules help automate mgmt.

By Joanne Cummings
Staff Writer

SOUTHBOROUGH, Mass. — Chipcom Corp. is expected to introduce today several management products for its ONline System Concentrator hub that are designed to help the hub manage itself with minimal user intervention.

The new ONdemand Network Control System (NCS) software, working with new Ethernet management modules, will identify the source of network errors and automatically isolate or shut down corrupting ports.

ONdemand NCS is a graphics-based application that runs on a Sun Microsystems, Inc. SPARCstation on top of SunConnect's SunNet Manager net management system. It works with hub-based Ethernet management modules to reconfigure network devices as necessary.

When a module reports an alarm, such as a broadcast storm, ONdemand NCS can determine which port is responsible for the

error and enable the user to either partition off that part of the net or shut the port down completely.

By year end, a new release of ONdemand NCS will be able to perform those functions automatically, without user intervention, according to Phil Fulchino, product line manager for network management at Chipcom. "We're aiming for a self-healing network," he said.

The software can also be used to reconfigure networks at preset intervals. For example, at the end of the day, ONdemand NCS could partition certain servers onto a local-area network by themselves for backup, speeding the backup procedure and leaving other users undisturbed.

The hub's new Ethernet management modules, which are required with ONdemand NCS, will be available in two versions, the ONline Ethernet Management Module (EMM) 3.0 Basic and EMM 3.0 Advanced.

(continued on page 14)

Trakker tool hunts down net glitches

MARLBOROUGH, Mass. — Concord Communications, Inc. last week unveiled a new software tool for its Trakker internetwork monitor that helps users pinpoint the devices responsible for network problems.

The new Who Tool works with Trakker to instantly identify which stations are responsible for flooding the network with traffic and isolate the sources of unusual network activity, such as stations emitting error packets.

Trakker consists of software running on a Sun Microsystems, Inc. SPARCstation and Reduced Instruction Set Computing-based monitors residing on each network segment.

The segment monitors gather network statistics and send them to the workstation, where the software maintains a database of the statistics and provides reports

on network activity, such as network and router utilization as well as server usage.

Tracking packets

Who Tool also resides on the SPARCstation and communicates with Trakker's database. When a problem occurs on the network, Who Tool lets the user view the names — in order of traffic volume — of every device that has recently sent or received error packets, such as those sent to the wrong destination.

The tool provides a view of the specific dialogues between devices. For example, if a malfunctioning router sends packets to the wrong devices, the error messages generated by the devices identify the routing problem, but not the source.

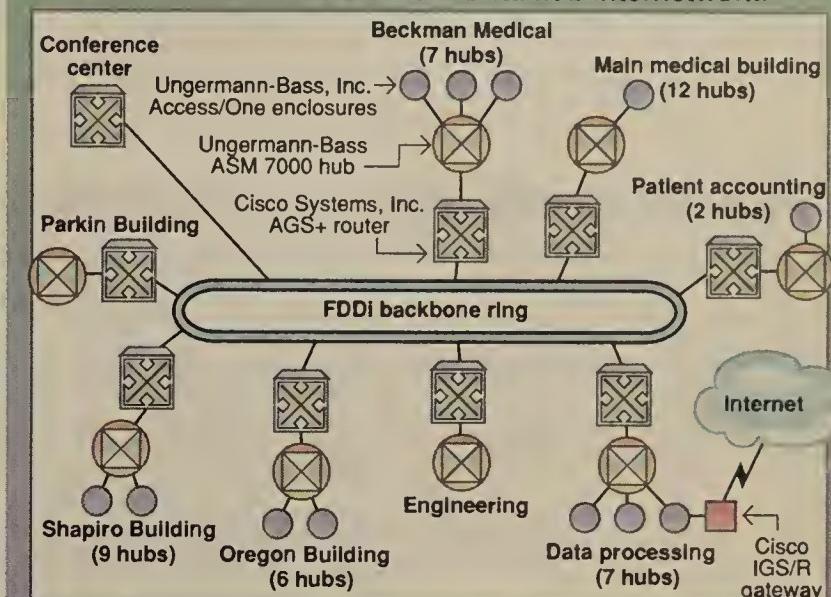
Who Tool would indicate which router is sending the misrouted packets, thus minimizing troubleshooting time.

Available now, Who Tool is a standard feature of Trakker, which costs \$30,000 for a base system supporting two local-area network segments.

Additional segments are priced at \$6,000 each. □

Hopenet 2000

Medical center links 51 LANs via hub internetwork.



City of Hope National Medical Center was looking toward the future when it built Hopenet 2000, a LAN internet based on an FDDI backbone that will provide the required bandwidth for planned medical imaging applications.

GRAPHIC BY SUSAN J. CHAMPEY SOURCE: CITY OF HOPE NATIONAL MEDICAL CENTER, DUARTE, CALIF.

Hospital puts hope in FDDI-based net

California medical center's new LAN internet improves productivity, provides path to the future.

By Joanne Cummings
Staff Writer

DUARTE, Calif. — In a business where a few seconds can mean the difference between life and death, City of Hope National Medical Center here is banking on a new FDDI-based internetwork to support critical communications and lay the foundation for such future applications as X-ray imaging and electronic medical records.

The new internet, called Hopenet 2000, links 51 geographically dispersed departmental local-area networks with one another as well as with the hospital's IBM mainframe, providing seamless connectivity and a host of productivity benefits, according to Ron Zelman, technical services manager at the non-profit catastrophic disease hospital and research facility.

"We wanted to provide network connectivity so that anyone could get to anything from anywhere," he said.

The network is based on nine primary Ungermann-Bass, Inc. Access/One wiring hubs that concentrate traffic feeding in from 43 secondary Access/Ones at the sprawling 102-acre facility.

The primary hub traffic is then routed across the newly installed Fiber Distributed Data Interface

backbone using Cisco Systems, Inc. routers (see graphic, this page). The net also features a gateway to the Internet, providing the hospital's research facilities with connectivity to other research centers nationwide.

Prior to Hopenet 2000, none of the center's LANs were linked together and the only access to the IBM mainframe was via direct terminal connections.

"Everything was isolated," Zelman said. "In order to have access to the pharmacy system, you would need a pharmacy terminal; to have access to radiology, you would need a radiology terminal."

Although researchers could access the Internet through a dial-up connection, it was only via electronic mail. They also were unable to perform file transfers as they can now do with the new net.

City of Hope is also using communications software it obtained from Bell Atlantic Health Care Systems, called Statlan, which provides access to the various servers on the network through a menu-driven graphical user interface.

Previously, a separate terminal was required to access each departmental system. "There (continued on page 14)

Hospital puts hope in FDDI-based net

continued from page 13

will be a lot of productivity benefits [with this new network]," Zelman said. "People will be able to get information from other departments without having to know anything about the other system; it's all the same interface."

The new network provides users with a faster link to the IBM mainframe, which currently holds all the center's patient records. "As far as the mainframe goes, I would say the network connection is about

50% faster [than the previous setup]," Zelman said. The mainframe is linked to the FDDI backbone via a gateway from Rabbit Software Corp. that can be accessed by all departmental LANs.

Previously, "we'd have to dig up the streets to lay the coax every time someone wanted to get connected," Zelman explained. "Now, we just go over the network."

The new internetwork is also easier to

manage than the previous setup. City of Hope is a test site for Ungermann-Bass' NetDirector Version 16.6, which provides a hierarchical management scheme. The management system consists of a primary NetDirector console that is linked to several secondary consoles, one for each outlying LAN.

The primary console provides a view of the entire network, and if there is a fault on a LAN, the icon for the NetDirector on that LAN will flash. The user can then click on the icon and see exactly what is on that NetDirector's screen so that the fault can

be analyzed and corrected.

"It off-loads the polling functions from the primary NetDirector," Zelman said. "And because it supports SNMP, it can manage the Cisco routers as well as the Access/One hubs."

Preparing a foundation for future applications was also a primary reason behind building Hopenet 2000.

"I don't think we're taxing the bandwidth [of the FDDI ring] right now with our current applications," Zelman said. "But we're looking at getting into imaging, electronic medical records and radiology images, and we'll need the bandwidth for that."

Zelman said he envisions terminals in all patient rooms and doctor's offices from which users could access digitized images of every medical record, patient chart and X-ray. "But that's about two or three years down the road," he added. □

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Link Notes

continued from page 13

LAN Manager and IBM OS/2 LAN Server traffic between remote local-area networks over either X.25 or point-to-point lines.

The personal computer-based router fits into an OS/2 file server or any PC running OS/2. It supports as many as four EiconCards, enabling it to connect to four X.25, four leased lines or any combination of the two.

Router for OS/2 also supports a maximum of 254 simultaneous sessions and features a Microsoft Windows- and IBM Presentation Manager-based network management console for status and statistics displays, router directory services, and polling and activity logging.

The router costs \$995 and will be available next month.

For more information, contact Eicon at (214) 239-3270. □

GLOBAL SERVICES

DOMESTIC AND INTERNATIONAL VOICE/DATA SERVICES, ACCESS EQUIPMENT AND REGULATORY ISSUES

Worth Noting

Ashland, Ore., recently became the first U.S. community to trial a personal communications service when it began a six-month trial in which 200 residents began using pocket-sized phones to make calls within the town.

Regulatory Update

AT&T last week filed its fourth contract offering, a three-year deal for an undisclosed customer that will use Megacom and MultiQuest, AT&T's 900 service. The user must commit to \$100,000 per year in Megacom charges and \$4 million per year in MultiQuest usage.

AT&T is basing its pricing on tariffed rates for MultiQuest and Megacom. In addition, discounts will apply to Megacom as usage increases.

If the customer commits to the minimum \$100,000 per year in Megacom charges, rates would range from 10.8 cents per minute for calls as far as 55 miles to 17.3 cents per minute for calls traveling more than 1,911 miles and made during business hours.

If the customer commits to \$500,000 per year in Megacom charges, prices would range from 7.3 cents per minute for calls of fewer than 430 miles to 9 cents per minute for calls traveling more than 1,911 miles during night/weekend time periods.

The contract also waives the carrier's normal service installation charges for Megacom, Accunet T1.5 access and T-1 local channels.

The contract has no renewal option and is only available to other customers if they order service between April 1 and July 1 and request installation by Sept. 30. □

IBM extends CallPath to include Centrex switches

PC software integrates switches, on-site hosts.

By Bob Wallace
Senior Editor

NEW YORK — IBM has released a personal computer-based CallPath software product that can be used to tie call center computers to Centrex switches for supporting private branch exchange-like functions.

IBM's SwitchServer/2 software runs on an IBM Personal System/2 and works with Northern Telecom, Inc. switches running complementary software components to deliver automatic number identification for call center hosts.

"This will be the first central office switch-to-host [link] supported by our CallPath product line," said Dan McIntyre, IBM's director of networking and voice solutions marketing. "Today, CallPath only supports PBXs."

The software is the end result of a multivendor project announced in November 1990 in which IBM, Northern Telecom and Nynex Corp. worked with Syracuse University in Syracuse,

N.Y., to develop and trial a central office switch-to-host capability.

That effort resulted in the development of a net where an IBM Application System/400 mini-computer at the school was used to receive ANI from a Northern Telecom DMS-100 central office switch to provide campus security officers with screens of data, which aided them when responding to emergency calls. The trial is still under way ("Vendor troika teams in CO switch-to-computer trial," NW, Nov. 12, 1990).

The commercial release of the product runs on a PS/2 instead of an AS/400 and acts as a gateway between Northern Telecom DMS-100 or DMS-SuperNode central office switches and either a second PS/2, an AS/400 or an ES9000 series mainframe supporting CallPath. IBM last week said it will extend that connectivity to include its RISC System/6000 workstation.

SwitchServer/2 requires a program called CompuCALL on (continued on page 16)

Octel unveils a high-end voice system

By Bob Wallace
Senior Editor

MILPITAS, Calif. — Octel Communications Corp. has announced a high-end voice processing system designed to support centralized voice mail service for as many as 5,000 subscribers.

The new system, called the XC1000, can be configured to support 144 ports and 672 hours of storage. Previously, Octel's largest system was the Aspen Maxum, which could support as many as 72 ports.

Octel is betting that companies will buy the XC1000, which can cost more than \$1 million, rather than using voice-messaging services from voice mail service bureaus such as The Tigon Corp.

"Users that are willing to make the capital investment and

manage and administer the system will buy the XC1000," said Joe Sigrist, Octel's group product manager. "Companies that don't want to control a system will look to service bureaus."

According to Rob Reid, Octel's marketing vice-president, the XC1000 is available now in North America and will be introduced in Asia, Europe, Latin America and the Pacific Rim. "Our multinational corporate customers wanted larger systems," he said.

The product can be configured to support between 48 and 144 ports. As many as three XC1000s can be networked with fiber to form an Octel Super-System, which can support a maximum of 432 ports, 60,000 mailboxes and 2,016 hours of message storage. The Super-System will be available by year end.

The XC1000 supports voice messaging and more demanding applications, including interactive voice response (IVR). Sigrist said user acceptance of other applications has limited the number of ports available for telephone answering and voice mail, thereby fueling the need for larger systems (continued on page 16)

Caller ID's bumpy ride through Pennsylvania's legal system

Bell Telephone Co. of Pennsylvania files caller ID service with no blocking provision.

Complaints prompt the Pennsylvania PUC to suspend caller ID tariff.

The PUC's ALJ recommends allowing callers to block transmission of their number to avoid violating state's wiretap laws.

The PUC rejects ALJ recommendation and allows caller ID with no blocking.

Four parties ask Commonwealth Court of Pennsylvania to review the PUC's decision. Judge orders stay of caller ID pending resolution.

Commonwealth Court rules that caller ID violates state wiretap laws.

Separate appeals are filed with the Pennsylvania Supreme Court, where they are later consolidated into 1 case.

State Supreme Court upholds ruling that caller ID violates wiretap laws.

ALJ = Administrative law judge
PUC = Public utility commission

GRAPHIC BY SUSAN J. CHAMPEONY

Pa. caller ID ruling may be far-reaching

Services found to be illegal under state wiretap laws, which were modeled after federal regs.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — In the wake of the Pennsylvania Supreme Court's recent ruling that caller identification service is illegal, corporations may lose part or all of their ability to collect and use callers' telephone numbers.

Caller ID services and their long-distance counterpart, automatic number identification services, have been used extensively by companies for applications as diverse as local pizza delivery and account lookups. The services are currently subject to a hodgepodge of laws and regulations throughout the nation.

However, the Pennsylvania ruling — the first court challenge of caller ID — brings into question whether either of the number identification services are legal in the U.S. The decision may force regulators and lawmakers to settle on one national law or risk having the services shut down.

Caller ID allows a customer to view the originating telephone number of a caller, whereas ANI is typically used to deliver call detail statements to sponsors of long-distance 800 or 900 services at the end of the month. However, ANI can also deliver numbers in real time.

Privacy advocates have been strongly opposed to caller ID (continued on page 16)

since a caller's number is transmitted even if the person is paying to have an unlisted number. However, carriers offering the service maintain that caller ID cuts down on harassing or threatening phone calls.

Wiretap violation

Caller ID service was found illegal in Pennsylvania not on privacy grounds, but because it violates the state's wiretap laws. Pennsylvania, like many states, modeled its wiretap laws after federal rules, so both caller ID and ANI services may now be at risk.

"The Pennsylvania statute is virtually identical to the federal law, and although it isn't binding [at the federal level], the Pennsylvania decision makes a strong suggestion that caller ID is not legal under the federal statute either," said Jon Leibowitz, counsel for Sen. Herbert Kohl (D-Wis.).

Kohl has introduced a bill, which could be voted on in the Senate within the next few weeks, that would amend the federal wiretap act to specifically make caller ID and ANI services legal. The bill also requires that carriers allow callers to block transmission of their numbers on a call-by-call basis.

Rep. Edward Markey (D-Mass.) last year introduced a bill (continued on page 16)

Pa. caller ID ruling may be far-reaching

continued from page 15

that would prohibit companies from using phone numbers collected via caller ID and ANI for anything other than internal purposes. It also gives callers the opportunity to block transmission of their numbers and includes a provision that barred state regulators from prohibiting caller ID.

By mandating a blocking option, the bills protect caller privacy and may short-circuit concerns about wiretap law viola-

tions. In Pennsylvania, the law requires that both parties give consent before any part of their conversation can be captured by an electronic or mechanical device.

Some experts argue that if a blocking option is available and a caller chooses not to use it, that is tantamount to giving consent. A spokesman for Bell Telephone Co. of Pennsylvania said the carrier believes it could file a new version of caller ID that allows blocking, which would keep the service from violating the wiretap law.

The Pennsylvania ruling also raises serious questions about the Federal Commu-

nications Commission's effort to establish rules for a long-distance version of caller ID. An aide to FCC Chairman Alfred Sikes said the agency has asked the Department of Justice to study the question of wiretap law violations at the federal and state levels and issue a recommendation.

The FCC requested help from the department last November and is still waiting for a response.

"Depending on what the Justice Department's reaction is, it could be a problem for caller ID," the FCC aide said.

It is unclear how many states have pat-

terned their wiretap laws after the federal statute. North Carolina's attorney general ruled in 1990 that caller ID appeared to violate the state's wiretap law. In 1991, the state's public utility commission (PUC) voted to allow the service on an experimental basis but required a blocking option.

An administrative law judge working for the California PUC recommended that the state not allow caller ID even though Pacific Bell proposed offering the blocking alternative. The matter was presented to the full PUC, and a decision is pending. □

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IBM extends CallPath to CO switches

continued from page 15

the DMS-100 or DMS-SuperNode central office switch — which will be available in the third quarter — and a central office-based automatic call distribution (ACD) service. The central office switch passes the ANI to the PS/2, which retrieves the customer profile from a host and delivers it to an agent as the call arrives.

Gerry Cobley, director of alliance development for Northern Telecom's Public Networks Switching, said the line linking the PS/2 to the switch can be a dedicated link, an Integrated Services Digital Network Basic Rate Interface line or a non-ISDN switched digital connection.

Use of the new IBM software will depend on how soon and how widely central office-based ACD services are deployed. Only a few of the 22 Bell operating companies offer such a service. This slow deployment has frustrated many Centrex users that responded by purchasing ACDs ("NCUG meeting portends affordable CO-based ACD," NW, Nov. 12, 1990).

"Many of the BOCs are preparing to [offer] CO ACD services," Cobley said.

SwitchServer/2 for the Northern Telecom DMS-100 central office switch will be generally available Sept. 25. IBM would not divulge pricing for the software. □

Octel unveils high-end voice system

continued from page 15

tems than the Aspen Maxum.

"Customers generally start using the system for telephone answering and voice mail and gradually begin introducing additional applications such as IVR," Sigrist said. "When you combine that with adding more end users, you can see why companies need bigger systems."

The XC1000 can be integrated with AT&T's System 75 and 85, Definity Generic 1, 2 and 3 private branch exchanges, as well as InteCom, Inc.'s IBX, Northern Telecom, Inc.'s Meridian 1 and SL-1 switches, NEC America, Inc.'s NEAX 2400 and Rolm Co.'s CBX 8000, 9000 and 9751.

The XC1000 can also be integrated with central office switches such as AT&T Network Systems group's 1AE5S and 5ESS and Northern Telecom's DMS-100.

According to Sigrist, the XC1000 can be equipped with optional backup cards and disk drives, a redundant power supply, a standby processor and backup file cards. □

ENTERPRISE APPLICATIONS

CLIENT/SERVER AND ENABLING SOFTWARE: DISTRIBUTED DATABASE, MESSAGING, GROUPWARE AND IMAGING

Worth Noting

"Waving a flag and giving people the idea that standards are here before they are is a bad thing to do. The people who are pressing standards a little too hard are losing their jobs."

Alan Paller
Open systems champion
Computer Associates
International, Inc.
Islandia, N.Y.

Store & Forward

Alacrity Systems, Inc., a 4-year-old start-up in Hackensack, N.J., that began selling products in December, last week announced a networked version of its Desktop Document Manager (DDM) for storing and managing facsimile and document images on microcomputers.

The DDM Groupserver consists of an add-on card and software for Microsoft Corp. Windows-based microcomputers.

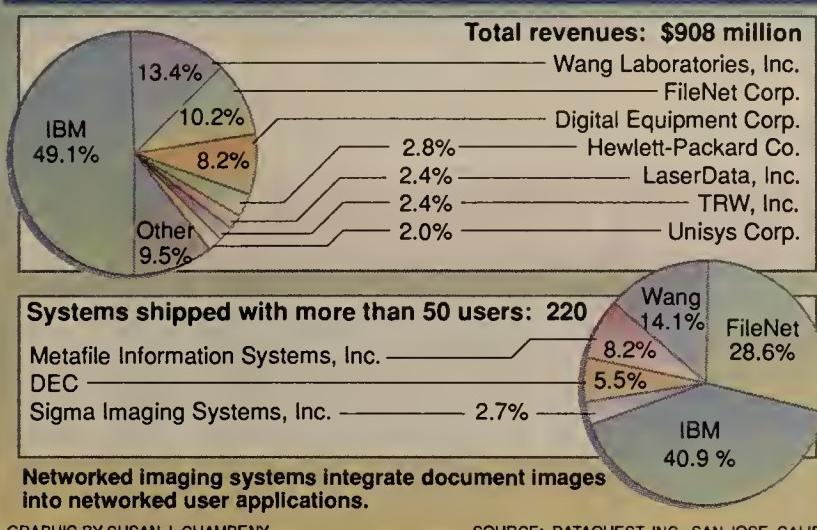
The add-on card contains 8M bytes of memory for storing document images, as well as interfaces for a document scanner, printer and fax machine. It also compresses and stores fax and document images.

DDM Groupserver software indexes the images and manages their distribution to remote clients linked to the DDM Groupserver via IBM Network Basic I/O System local-area networks.

Remote clients can use DDM Softaccess software in order to retrieve images from the DDM Groupserver, as well as access printers and fax machines linked to the Groupserver.

The DDM Groupserver costs \$2,995, while DDM Softaccess is priced at \$495. □

1991 networked imaging system market at a glance



Users gain better access to data with new Oracle server

Adds TCP/IP support, eases import/export of data.

By Timothy O'Brien
West Coast Bureau Chief

REDWOOD SHORES, Calif. — Oracle Corp. last week announced a new release of Oracle Server for NetWare that offers increased performance and enhancements that provide greater data access from different platforms.

New features in Version 1.1 include support for the Transmission Control Protocol/Internet Protocol at the server and the client, improvements in the loading, importing and exporting of data, and better management of disk I/O and memory usage.

"With these performance and connectivity enhancements, the Oracle Server can now do the types of processing that was difficult or impossible to do before on a LAN-based server," said Robert Jesse, senior director of desktop development at Oracle.

Introduced last April, the original version consisted of four NetWare Loadable Modules (NLM) that enabled users to run the relational database on a Novell, Inc. file server and achieve much better performance than when running it under OS/2 or Unix.

With this release, Oracle has implemented more of its database technology — such as its utilities and TCP/IP — as NLMs. Outfitted with all the new features, Version 1.1 now requires a total of 10 NLMs.

TCP/IP support was added to the new version so it can support Apple Computer, Inc. Macintoshes and Unix workstations as cli-

ents, as well as provide a server TCP/IP interface for connections and access to TCP/IP-based host computers.

The release also makes it possible to simultaneously support both TCP/IP and Novell's Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) protocol on the server, allowing clients to access data in non-Oracle databases more easily.

Clients also benefit in terms of performance because Oracle converted its loader utility — software that loads non-Oracle data into the database — and its Import/Export utilities to NLMs, eliminating the network overhead required to run these utilities from client workstations.

The Import/Export utilities, which allow data to be sent and received from Oracle databases on other platforms, runs much faster as an NLM instead of a client application.

According to Jesse, Oracle believes this new server functionality makes downsizing host data more feasible. Until now, database "snapshots" that moved large amounts of data from a host to a local-area network-based server were not fast enough to provide a useful data load.

"The first phase of downsizing is being able to do a snapshot," Jesse explained. "People weren't getting beyond Phase 1 because of this data load issue."

The new version of the Oracle Server for NetWare also provides

(continued on page 18)

D&B Software intros client/server tools

Firm rolls out its first software that lets users share mainframe processing loads with LAN clients.

By Barton Crockett
Senior Editor

FRAMINGHAM, Mass. — Mainframe software giant Dun & Bradstreet (D&B) Software last week announced its first client/server software, a set of tools that enable users to off-load processing chores for mainframe-based applications to local-area networks.

The new products make it possible to download data from D&B Software's mainframe-based general ledger software and IBM's DB2 relational database management system, as well as electronic information services from companies such as Dow Jones & Company, Inc. to a LAN-based Sybase, Inc. SQL Server relational DBMS. The data can then be routed to Microsoft Corp. Windows-based clients that perform a variety of analytical chores.

Analysts said that with the release of these products, D&B is beginning a difficult but necessary migration to LAN-based client/server environments. Until now, the company sold only mainframe software.

"They have to do something like this to compete with the increasing number of vendors offering client/server business applications on LANs," said Shaku Atre, president of Atre, Inc., a computer and software consulting company in Rye, N.Y.

D&B Software, based here, is a unit of The Dun & Bradstreet Corp., with annual software service revenues exceeding \$540 million. The company was formed in 1989 by the merger of mainframe software firms McCormack & Dodge Corp., a unit of

(continued on page 18)

Lotus will boost Notes search tool

By Barton Crockett
Senior Editor

CAMBRIDGE, Mass. — Lotus Development Corp. last week announced plans to enhance its Notes groupware with text search and retrieval technology from Verity, Inc. that will enable users to search for electronic documents across multiple Notes databases.

According to Lotus officials, Verity's Topic text search and retrieval software engine will be incorporated as a standard feature of Notes Version 3, which is scheduled to ship in the fourth quarter.

Better text search and retrieval capabilities "is one of the most requested enhancements by Notes users," said Chuck Olson, a Notes product manager here.

Currently, users can search individual Notes databases for text containing words or phrases, but the groupware does not support text searches across multiple

Notes databases.

The Topic engine, which consists of software on a server that indexes text stored in databases, will enable users to search for phrases in multiple Notes databases scattered throughout a network.

Another benefit of the capability includes increased performance. The Topic engine, for example, will be able to retrieve electronic documents in a fraction of the time Notes now requires. Also, the Topic engine will support more sophisticated search and retrieval capabilities than Notes does. For example, the Topic engine will rank electronic documents by their relevance to a user's request.

Olson said the Topic engine will increase by 50% the amount of storage capacity users need on both servers and clients in a local-area network in order to store electronic documents. The extra memory will be needed to store the Topic index.

Nonetheless, users will find the improvements in Notes' text retrieval capabilities attractive, according to Pamela Bliss, senior industry analyst for the document imaging service at Dataquest, Inc., a market research firm in San Jose, Calif. □

D&B Software intros client/server tools

continued from page 17

Dun & Bradstreet, and Management Science of America, Inc.

The new software tools include Financial Stream Analysis, InterQ and SmartStream. InterQ is used to transparently establish network links between an SQL Server on a LAN and mainframe-based applications. The software has components for the LAN server and mainframe and uses LU 6.2 sessions for transporting data.

SmartStream is a work flow automation

tool that rides on top of InterQ and enables users to compile data from multiple sources. The product consists of both Windows-based client and OS/2-based server software that can gather information from D&B Software's mainframe-based general ledger software, DB2 DBMSs and electronic information services from CompuServe, Inc., Dow Jones and MCI Communications Corp.

Once it has collected the requested data

in an SQL Server DBMS on a LAN, SmartStream can forward data to users, said John Pepe, D&B Software's senior vice-president of customer support and engineering in Atlanta.

Work flow automation capabilities enable users to program SmartStream to compile and deliver data at preset times or after certain events. For example, SmartStream could be used to download sales data from D&B Software's mainframe general ledger once a week.

Users can enter data collected by SmartStream into their own server- or client-

based application software. Alternatively, data can be entered into Financial Stream Analysis software, which is client/server software that lets users compile data into a variety of graph, bar and pie charts.

Pepe said pricing for the software varies with the number of users. But he said companies that use the three software tools to deliver information to a total of 10 users on a LAN will pay a one-time license fee of about \$99,000.

Rogers Communications, Inc., an \$838 million broadcasting, cellular mobile telephone and cable television company in Toronto, plans to use the tools to deliver general ledger information to a few hundred financial analysts, said Terry Rapoch, vice-president of corporate systems and planning at the company.

He said the tools will give financial analysts access to more information than they can obtain from the D&B Software general ledger software that Rogers Communications now uses.

Pepe said that in the second half of this year, D&B Software will announce other client/server software products. He declined to give further details.

But Clare Gillan, manager of application solutions at International Data Corp. in Framingham, Mass., predicted that D&B Software will roll out client/server versions for applications such as accounts payable, general ledger and purchase orders. Currently, D&B only sells mainframe-based software for these applications.

Gillan added that, later this year, D&B Software will likely enable Financial Stream Analysis, InterQ and SmartStream to access other D&B Software mainframe applications.

Users gain better access with server

continued from page 17

improved performance by using Novell's Direct File System facilities, which allow Oracle to bypass NetWare's memory caching and disk I/O management to provide those capabilities on its own.

"Every database uses its own caching method, and since running more than one caching facility is redundant, being able to bypass Novell's caching is a pure performance win for us," said Doug Laird, group product manager of desktop products at Oracle.

Although there has been recent publicity about new competition for Oracle from Gupta Technologies, Inc.'s highly rated SQLBase offering in the Novell arena, Oracle defends the performance of its database server.

"Performance alone is not necessarily the issue. Oracle performs sufficiently to run today's client/server applications as enterprise-wide network database solutions," Jesse said. "No one is complaining about performance on NetWare. It's OS/2 that didn't have the horsepower for these applications."

Oracle Server for NetWare Version 1.1 is priced according to the number of concurrent users with an eight-user system. It starts at \$3,999. TCP/IP support through Oracle's SQL*Net is available as a separate option. The new release is expected to be available in June.

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS, ALLIANCES AND FINANCIALS

Worth Noting

"We've decided against allowing users to join [SDSAF] because if we had customers there, it would change the flavor of what goes on. You'd be amazed at the social intercourse that takes place between AT&T, MCI and Sprint here."

Bernie Schneider
President
Switched Digital Services
Applications Forum
Kansas City, Mo.

People & Positions

Texas Instruments, Inc. has named Gary Sprehe to the newly created position of vice-president of its Information Technology Group, which includes the company's internal network and computer operations as well as a number of commercial product business units.

Sprehe's responsibilities will include generating new consulting business for TI and looking for internal technologies that can be marketed commercially.

Sprehe will retain his responsibilities as manager of information services.

Andrew Knott has been named to the newly created position of vice-president of marketing for Gandalf Systems Corp., a Cherry Hill, N.J., net equipment maker.

In that capacity, he will be responsible for all aspects of Gandalf's U.S. product marketing.

Previously, Knott was marketing director for Gandalf-Infotron International, Ltd. in Ascot, England. □

National ISDN 1 supporters plan demo to spark interest

Call for greater user participation and guidance.

By Ellen Messmer
Washington Correspondent

HUNTSVILLE, Ala. — Users and vendors coordinating an ambitious nationwide demonstration of Integrated Services Digital Network in November to jump start user interest in ISDN are calling for more user participation.

The Transcontinental ISDN Project (TRIP) '92, which is being coordinated by the Corporation for Open Systems International (COS), the North American ISDN Users Forum (NIUF) and carriers, is a week-long event intended to showcase National ISDN 1, an industry specification designed to overcome ISDN incompatibility issues.

The coordinators of TRIP '92, which will run from Nov. 16-20, said a number of users have already pledged to sponsor "open houses" to demonstrate vendor services and customer premises equipment conforming to National ISDN 1.

However, vendors said they need to hear more user demand

in order to justify the multi-million-dollar investment in switch upgrades needed to support the new standard.

"We're spending millions of dollars to do this, and we need more support from the user side," said Cathy Simon, manager of Ameritech Services, Inc. product development, at a session at the recent NIUF. Informal estimates place the price tag for upgrading a single central office switch to National ISDN 1 at \$500,000.

Although TRIP '92 coordinators declined to release specifications about who is participating in the demo until later this month, Jim Jacobson, ISDN task manager of Jet Propulsion Laboratory, agreed more users need to get involved.

Jacobson emphasized that the Bell companies and long-distance carriers AT&T, MCI Communications Corp. and Sprint Corp. are pushing to add support for National ISDN 1 by November. Users need to tell carriers where

(continued on page 20)

INDUSTRY BRIEFS

Novell settles suit, joins groups. Novell, Inc. last week announced the settlement of a trademark infringement action against Network Systems and Services, Inc. (NSSI), a New York computer training firm. Novell filed the suit in October 1991, charging that NSSI had been fraudulently representing itself as a Novell Authorized Education Center.

Under the settlement, NSSI agreed to make an undisclosed payment to students and consented to a permanent injunction barring them from using Novell's trademarks without permission.

Separately, Novell announced membership in three industry standards organizations. The firm said it has joined the Open Software Foundation, Inc., Unix International, Inc. and the Object Management Group to better serve the multivendor net needs of its customers.

Video start-up gets helping hand. Lightwave Systems, Inc., a Simi Valley, Calif., videoconferencing equipment start-up, last week announced that it has signed a contract with a company that specializes in helping small firms gain market presence.

Technology MarketForce, Inc., which is based in Malibu, Calif., will provide Lightwave with sales, marketing, financial and management services.

Lightwave makes video transceivers, which can be used to create full-color, desktop-based videoconferencing systems

(continued on page 20)

NSFNET appropriate-use policy

Appropriate NSFNET uses:

- Communications with foreign researchers and educators for research or instruction.
- Communications and information exchange for professional development.
- Disciplinary/society, university/association, government/advisory or standards activities related to the user's research and instructional activities.
- Applying or administering grants or contracts for research or instruction.
- Other administrative communications supporting research and instruction.
- Announcing new products or services for research or instruction.
- Traffic originating from a network of another Federal Networking Council agency if the traffic meets the appropriate-use policy of that agency.
- Other communications, except for illegal or specially inappropriate use.

Inappropriate NSFNET uses:

- For-profit activities.
- Extensive use for private or personal business.

NSFNET = National Science Foundation Network

GRAPHIC BY SUSAN J. CHAMPEY

SOURCE: NSF, WASHINGTON, D.C.

Users question new NSFNET usage policy

Several groups say restrictive appropriate-use rules have outlived their usefulness, seek change.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The National Science Foundation (NSF) recently issued written ground rules defining the information content of data allowed on the NSF Network (NSFNET), the backbone of the Internet.

The new rules set in stone the NSF's informal verbal definition of "appropriate-use," the legal concept that the federally funded Internet can be used only for research data and not commercial purposes.

But even as NSF released the new guidelines, the group's officials called the appropriate-use policy an obstacle to the development of a national network and an impediment to communications between industry and research organizations.

At a recent House Science, Technology and Space subcommittee oversight hearing on NSFNET management, Stephen Wolff, NSF networking director, asked Congress to relax the rule prohibiting use of the NSFNET backbone for for-profit activities by academic or business users on the Internet.

"If Congress allowed us to relax it, we'd go along with it," Wolff told Rep. Rick Boucher (D-Va.), chairman of the subcommittee. "A policy of unrestricted access would allow the network to exploit economies of scale."

Several other representatives from the user community and the industry who testified at the hearing also backed lifting of the appropriate-use policy.

"The acceptable-use policy should be dropped," said Mitchell Kapor, president of the Cambridge, Mass.-based public interest group, the Electronic Frontier Foundation. Kapor said nearly 60% of all registered computing sites on the Internet are commercial, as opposed to academic.

"Within two years, that number is expected to grow to nearly 90%," he said. But according to Kapor, many companies are hesitant to use the Internet because of uncertainty over what the appropriate-use rules are.

Impeding collaboration

Eric Hood, president of the Federation of American Research Networks (FARNET), a 32-member association of operators of state, regional and national computer networks that use NSFNET backbone services, said the acceptable-use restrictions impede close collaboration between government, academia and industry.

In a list of recommendations given to Congress on improving management of the NSFNET, FARNET pointed out, "The pressures for commercial use of the backbone facilities, from both potential customers and potential (continued on page 20)

Users question new NSFNET usage policy

continued from page 19

providers, are tremendous. Vendors are clamoring to deliver software, technical support, instruction, news and information across the network, and buyers are ready to purchase."

FARNET said the market for network-based services is immature in part because "restrictions on the commercial use of government-sponsored networks have discouraged such use."

Hood, Wolff and Kapor all noted that the acceptable-use policy is based on the honor system and largely self-policing, and that violations are not uncommon.

Thousands of students and researchers violate the appropriate-use rule daily by sending personal electronic messages as a part of "their life's business," Kapor said.

But he noted that the one exception NSF has granted on commercial use has generated controversy.

The decision in 1990 by NSF to allow Advanced Network & Services, Inc. (ANS), the provider of NSFNET backbone services,

to sell commercial services through its CO+RE Services, Inc. subsidiary created an upswell of resentment from other service providers, including Performance Systems International, Inc. (PSI), which felt ANS had been given preferential treatment.

Many regional networks refused to sign the ANS commercial services interconnection agreement, Kapor said, pointing out that the controversy caused the first ANS commercial customer, Dialog, Inc., "to back off and reclassify itself as a research and education customer."

William Schrader, PSI president, testified. "When Dialog discovered that it could access fewer than 5% of the Internet users, it converted to a normal ANS customer and agreed to comply with the NSFNET policy of supplying only research and education traffic."

But Kapor added that the Commercial Internet Exchange, the seven-member association of commercial Internet carriers, are close to developing interconnection agreements with ANS that would promote the open flow of commercial traffic to all parts of the Internet willing to accept it. □

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National ISDN 1 backers plan demo

continued from page 19

they want to see it implemented first, he said.

"TRIP '92 is the beginning of a permanent ISDN infrastructure," Jacobson said.

In addition, he announced that his company would be a user participant and sponsor an open house for the public to view National ISDN 1 user applications.

Representatives from the General Services Administration, which oversees the government's Federal Telecommunications System 2000 network, announced that the government would also participate as a user. The GSA support underscores growing federal interest in National ISDN 1.

Although customer premises equipment vendors have registered complaints with Bell Communications Research on the customer premises equipment guidelines for National ISDN 1 ("National ISDN 1 raises new issues for users, industry," NW, March 9), many suppliers are nevertheless going to be ready with equipment by November.

Users interested in participating in TRIP '92 should call Kathy Nevolo, COS coordinator for TRIP '92 at (703) 883-2752. The coordinators emphasized they want to nail down participation in the project immediately. □

Industry Briefs

continued from page 19

that operate over unshielded twisted-pair and fiber cabling in campus environments.

PCN businesses merged. US West, Inc. and Cable & Wireless PLC have agreed to merge their U.K. personal communications network (PCN) businesses. Each company will own 50% of the new firm, which was formed by the merger of US West's Unitel PCN business and Mercury Personal Communications, a subsidiary of Cable & Wireless.

The new company will retain the Mercury Personal Communications name and help accelerate the construction of a new PCN system in the U.K., officials from both companies said.

The company expects to offer its first service by the middle of next year.

PCN is a public switched telecommunications network based on digital cellular radio technology and licensed to provide voice and data communications to users of mobile telephones. □

MANAGEMENT STRATEGIES

ENTERPRISE NETWORK STRATEGIES, USER GROUPS AND MANAGING PEOPLE AND TECHNOLOGY

Worth Noting

“People aren’t strapped down to desks like they used to be. Departments [can be] dynamically reconfigured into teams and work groups. Wireless [net technology represents] a way to support that better.”

John Crankshaw
Telecommunications manager
Steelcase, Inc.
Grand Rapids, Mich.

Association Watch

Rockwell International Corp.’s Switching Systems Division will host the Spring 1992 Rockwell Galaxy ACD User Meeting from May 6-8 at the Wyndham Hotel in Itasca, Ill.

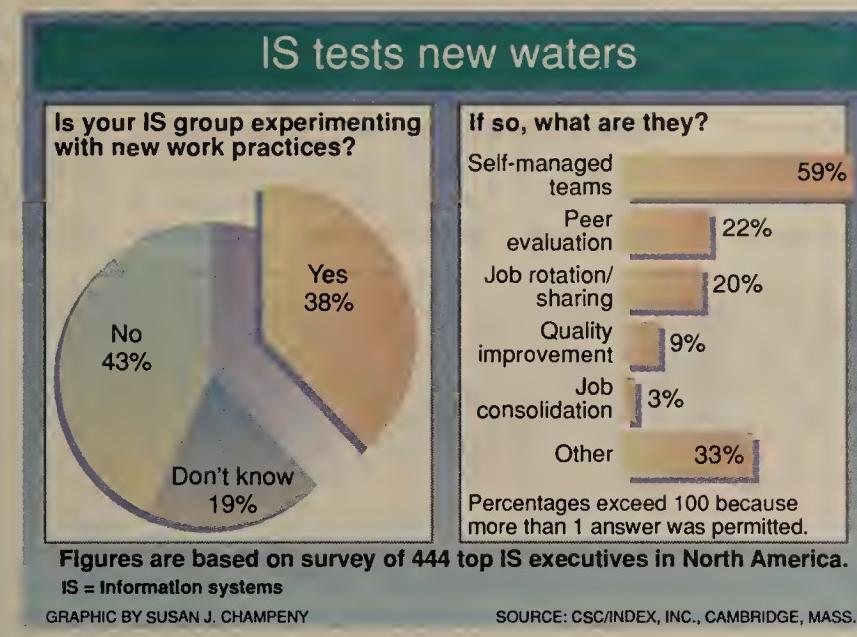
The event, which is open to all Galaxy ACD customers at no charge, will be used to unveil a new line of call center voice and data products, a result of the recent alliance with Radish Communications in Boulder, Colo.

For more information about the meeting, contact Denise Knaus at Rockwell at (708) 960-8443.

The IEEE Computer Society has issued a call for papers for its 17th Annual Conference on Local Computer Networks, which will be held from Sept. 13-16 in Minneapolis.

“The Conference on Practical Leading Edge Computer Networking” will focus on the problems and issues of managing large local-, metropolitan- and wide-area networks.

For more information on deadlines and submission guidelines, contact Steve Bell at (415) 966-7926. □



Identifying the key issues for assessing outsourcing

Focusing on specific items helps tune the picture.

First in a three-part series examining outsourcing contract negotiations.

By Robert Zahler
Special to Network World

Outsourcing has become big business in the U.S. with significant numbers of companies signing multiyear outsourcing contracts worth millions of dollars.

According to a recent Merrill Lynch & Company, Inc. research report, outsourcing vendors will sign \$3.5 billion worth of contracts this year and \$9 billion in contracts in 1995.

With all this money changing hands, companies eager to outsource cannot afford to rush the negotiation process. Before sitting down with a vendor to negotiate an outsourcing contract, network and information systems (IS) managers need to carefully consider several major issues:

■ **Scope.** Users must have a clear understanding of what services the outsourcing vendor will provide and what operations the client will continue to handle. Typically, companies outsource their data center and network backbone. However, companies have increasingly been turning over to vendors responsibility for managing application development, regional nets attached to the

Zahler, a partner at the Washington, D.C.-based law firm of Shaw, Pittman, Potts & Trowbridge, has negotiated more than two dozen outsourcing contracts.

backbone, voice communications and distributed local-area networks.

■ **Personnel issues.** Every outsourcing deal presents a number of significant personnel issues that must be considered when negotiating a contract. There are a variety of ways that vendors and users can structure outsourcing contracts to handle these issues.

For example, some user companies choose not to transfer any staff to the outsourcing vendor and will pay severance to those individuals who are laid off as a result of the outsourcing contract.

The other extreme is to transfer all IS staff to the outsourcing vendor, which agrees to retain them for at least a year. Most outsourcing contracts call for vendors to give IS staffers the same salary and benefits they received before being transferred and recognize the years of service each staffer accrued while at the user company.

■ **Asset transfers.** Companies usually sell equipment or assign leased equipment used to run their IS operations to an outsourcing vendor. Before doing this, users need to determine the market price for owned assets, the assignability of leases and whether to give the vendor any purchase options associated with the equipment.

Users must also identify any liens or outstanding debt on the owned equipment and certify the equipment's maintenance record, if requested by the vendor.

(continued on page 23)

Help desk plays key role in growing nets

Panelists discuss the industry's increasing need for support staff to solve most network problems.

Q&A Low on information systems (IS) priority lists, network and systems support centers are growing in importance as companies recognize the value of providing high-quality customer service to both internal and external customers.

Network World Senior Editor Wayne Eckerson talked to several prominent help desk managers at a recent International Help Desk Conference in New Orleans. All the managers are Advisory Board members of the Help Desk Institute, an association of network and systems support centers with 24 chapters in North America and Australia.

Roundtable participants were Janet Wright, manager of client support at Royal Trustco, Ltd. in Toronto; Suzanne Hedman, help desk supervisor at United HealthCare Corp. in Minneapolis; Edward Hawthorne, vice-president at BankAmerica Corp. in Concord, Calif.; and Shirley Hosp, manager of network support at Baxter Healthcare Corp. in McGaw Park, Ill.

Is the role of the help desk in corporations changing?

Hosp: The support role has changed dramatically, primarily because of the proliferation of personal computers, [local-area networks] and office automation software.

It's not a simple thing [to provide support] anymore. You have to recruit a person with PC and network skills.

Hawthorne: In the past, help desks took calls and passed them off to technicians.

Now, the help desk is fixing problems and getting more involved in managing systems and network changes.

Previously, the help desk was notified after a new system or product was rolled out. Now, our company doesn't roll out new products until we know that the help desk can support them. The support staff is integrally involved in the discussion of any upcoming network and systems changes.

Wright: Your company might (continued on page 22)

EXECUTIVE BRIEFS

BY WAYNE ECKERSON

Hassle-free night school. About 35 MCI Communications Corp. staffers are working toward an MBA without leaving their offices in New York. The MCI staffers attend classes each Monday and Wednesday night at their company's offices in Manhattan. The courses, which are taught by professors from the Fordham Graduate School of Business, emphasize business issues in the telecommunications industry. The unique, on-site corporate MBA program was initiated in part by Peter Drucker, a professor at Fordham and noted business commentator.

Outsourcing model. Michael Zucchini, chief information officer at Fleet/Norstar Financial Group, recently published a six-page pamphlet that provides information systems (IS) managers with a framework for understanding the business imperatives driving corporate outsourcing decisions.

Zucchini describes four common reasons why companies outsource IS operations: scale, specialty, sale and surrender. He argues that outsourcing for reasons of scale and specialty is sound, but outsourcing based on sale or surrender signifies the presence of deeper problems that outsourcing will not remedy.

The pamphlet, called “The Four-S Outsourcing Model,” can be obtained by calling (401) 278-5800. □

Medical facilities anxiously await new net tools

By Skip MacAskill
Special to Network World

CHICAGO — Weighed down by mountains of paper and manual record-keeping procedures, information systems (IS) managers in medical facilities across the country are looking to new technologies to improve efficiency and productivity, according to a recent survey.

The survey of 548 health care professionals found that 66% of the respondents said they were "eager" to adopt optical scanning technology, which edged out the adoption of executive IS systems (64%), portable computers (55%), picture archiving and communications (54%) and voice recognition (54%).

The survey was jointly sponsored by Hewlett-Packard Co. and the Healthcare Information Management and Systems Society (HIMSS), a 4,000-member division of the American Hospital Association here, and distributed to attendees of the 1992 Annual HIMSS Conference.

The interest in these leading-edge technologies falls in line with the desire to automate various paper-based procedures, especially medical records, according to Dennis L'Heureux, HIMSS president and vice-president of IS at MetroWest Medical Center in Framingham, Mass.

People are looking to optical scanning technology as a way to automate medical records, he said.

"Optical scanners will essentially make microfiche obsolete," L'Heureux said. "With WORM technology, I can put hundreds of thousands of pages on a [compact disc] that can be accessed a number of different ways, produce a hard copy that almost looks better than the original and save a lot of money at the same time."

He was also high on voice recognition technology, which would reduce the time nurses spend completing paperwork, leaving more time for hands-on patient care.

"My own vision is that keyboards or any type of hand-held device will be obsolete within a few years," he said. "Voice recognition will allow nurses to speak all orders, history and notes into the system, then download it at shift change. That way, it's all typed and ready to be presented."

Surprisingly, the 1992 HP/HIMSS Leadership Survey found that 24% of the respondents were "reluctant" to adopt the emerging pen-based systems.

"Pen-based systems just haven't been marketed to the right places," L'Heureux said. "Also, people are struggling right now and can't afford to make a mistake automating some of these nursing routines because it would be too costly to revamp something that just didn't work out."

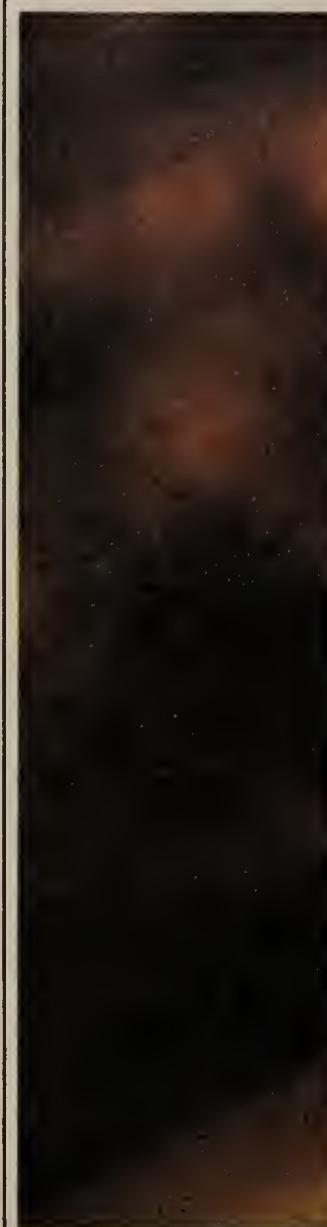
Other significant findings show:

- Almost 40% of the respondents said they have increased investments in information technology during the recession in order to increase productivity.
- Managers are frustrated over their hospital's approach to information technology, as only 30% said their facilities have

adopted leading-edge technology for a competitive advantage.

- Patient care/bedside systems (43%) were rated as the area that will receive the greatest IS investment during the next two years, followed by medical records (22%) and outpatient/physician offices (18%).
- The primary challenge during the next two years will be to integrate existing applications, according to 46% of the respondents.

The next most important challenge (27%) will be to increase the use and acceptance of applications by care givers. □



Help desk plays key role in growing nets

continued from page 21

be the exception. As I see it, the help desk is perceived as the low man on the totem pole. We are often the last group to be told of systems and net changes but the first to have to deal with the resulting problems.

Hedman: Executives at many companies are recognizing that external customers generate their attitudes about a company from its contact with the help desk. If help desk operators aren't knowledgeable,

able, users think less of the firm.

Before, the help desk was an answering service. It would fix a few things and route problem calls on. Our manager believes it's important for the help desk to know all changes coming down the road because sooner or later the help desk is going to get called about those changes.

Wright: But I don't think senior managers view the help desk as strategic to the corporation. That is changing, but I don't think we're there yet. They still want us to do more and more with less and less. The first thing help desk managers need to

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work on is getting commitment from top management to provide adequate funding and staffing so the help desk can function effectively.

Top management commitment is critical in order to recruit and retain staff and provide the quality service that users demand. Too often they just pay lip service and don't back it up with funds, staff and training when you need it.

What has been the impact of LANs on help desk operations?

Hedman: It takes longer to trouble-

shoot LANs because the problems are so complex and involve different vendors' equipment. Often, we have to farm out calls to one or more technicians, and then we have to coordinate their efforts. This takes time.

Hosp: Our volume of phone calls has increased tremendously since the company implemented LANs, and the average length of phone calls has gone from 1 to 2 minutes to 5 to 7 minutes, with some calls taking hours.

We used to solve 94% of all problems on the first call, but because of LANs, we now

only solve 79% of problems during the call.

Hedman: Companies give the help desk responsibility for handling problems with LANs, but they didn't give us any training. As a result, we have to learn LAN technology on the fly, which makes it hard to troubleshoot LAN problems over the phone.

Now that companies are connecting LANs, what kind of pressure has that put on the help desk?

Hawthorne: Internetworks are more

complex, but they may be easier to manage than a multiplicity of stand-alone LANs from a variety of vendors. This is because you need different tools and experts to troubleshoot individual LANs, but you can use just one tool to troubleshoot an internetwork.

Wright: Without proper documentation and procedures, it is difficult for help desk staff to troubleshoot a LAN, let alone an internetwork. Internetworks compound by 10 times the problems help desks encounter when trying to resolve LAN problems.

Are vendors providing the tools you need?

Wright: The tools are pretty good. It seems [vendors have] a newfound interest in help desks.

Hawthorne: That's true. But I think the emphasis at many companies is on trying to exploit existing tools in the company. Tools can help, but what's most important is the people. If I have the right people, I can run the help desk just fine with pencil and paper.

Hawthorne: In the past, most help desk tools were part of a systems management package. Now vendors are selling stand-alone help desk tools that might be integrated with other tools.

What kinds of tools are proving most useful?

Hosp: We installed a voice response unit that handles approximately 700 password resets a month. Although it only takes a minute to do a password reset, those minutes add up and take operators away from handling complicated calls.

Wright: Companies can use expert systems to train and prepare help desk staffs to support new technologies.

However, the expert system must be in place before the product is installed. This means companies should require vendors or internal development staffs to develop expert systems along with any new product or software release.

Wright: Ultimately, we would like to give expert systems to users so they can become self-sufficient and solve their own problems. This would cut down on the number of calls to the help desk. □

Identifying the key issues of outsourcing

continued from page 21

■ **Software.** Many software licenses hinder users from transferring software to outsource vendors. Licenses often stipulate that users cannot assign the license to another party or that the software must be used on the original customer's premises or on a particular computer platform. Many licenses also contain nondisclosure or confidentiality clauses that prevent users from letting outsource vendors access the software. Often software vendors require that users pay a fee if outside parties will be using the software.

Users need to understand the terms of their software licenses before entering outsourcing negotiations. In addition, users need to consider when and how software vendors should be consulted and what is a fair resolution of the issues from the software vendor's viewpoint. □



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OPINIONS

WIRING

BY PETER DUNPHY

Fiber is the choice for today's networks

For users, glass fiber is a better choice than any copper media for supporting both today's and tomorrow's network requirements. Only fiber can support the high-bandwidth traffic that networks will soon carry. Therefore, not only should users look to glass optical fiber as the first choice for backbone applications, but they should also consider fiber to the desktop when rewiring or planning new configurations.

There is still considerable debate whether 100M bit/sec applications are within the reach of unshielded or shielded twisted-pair media. By installing glass fiber now, network planners provide themselves and their businesses with some insurance. They can use fiber for Ethernet and token ring today and have the bandwidth available for future expansion to Fiber Distributed Data Interface. This actually saves money by preventing disruptions and additional installation expenses when users want to increase network bandwidth.

For today's companies, an advanced communications network is the key to success. Still, some will argue that they do not see the need for speeds at or exceeding 100M bit/sec on their networks. But with technology evolving so rapidly, few, if any, can accurately predict what they will require, even in the near term. Emerging bandwidth-hungry applications for such things as document transfer, computer-assisted design and video are driving the demand for higher network speeds.

Wall Street's J.P. Morgan & Company, Inc. recently completed construction of its new headquarters, which contains a number of fiber networks. There, for example, glass optical fiber links thousands of voice/data terminals and market data screens, and it carries massive amounts of information from network quotation services. The company chose glass fiber with future needs in mind, such as higher data rates, supercomputing workstations and graphic chart services.

Before long, the regional Bell holding companies will be offering enhanced electronic data interchange, image processing, electronic funds transfer capabilities and other services. Network designers with an eye on the future should make sure that when these competition-enhancing services become available, their networks will be able to utilize them.

Finally, network planners need to consider their cable's electromagnetic interference (EMI) emissions in the form of radio waves when operating at high data rates. Not only are noise and cross talk more of a problem at those rates, but new Federal Communications Commission requirements, effective by midyear, will be very specific and more stringent concerning these issues. Although both twisted-pair media emit EMI, shielded twisted pair offers a good deal of protection, and unshielded twisted pair may already be emitting excessive radiation at some installations, even at low data rates. Fiber optics is not subject to this phenomenon.

Designers of high-speed networks must meet today's needs and look ahead to future requirements. Considering that glass optical fiber is already the choice for current backbone applications, it should be installed in any part of the network that is planned for 100M bit/sec and higher. With its ability to support high-bandwidth traffic and inherent properties, glass fiber may not only be necessary, but in the near future, it could also be imperative. □

Dunphy is assistant product line manager for the telecommunications product division at Corning, Inc. in Corning, N.Y.

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EDITORIAL

Novell sends a message to E-mail users, vendors

After years of lying low as a bystander in the electronic messaging market, it appears Novell, Inc. is finally serious about improving electronic mail. With its NetWare Global Messaging architecture announced last week, Novell is serving up what amounts to a paradigmatic shift for E-mail.

Novell's strategy is admirable because it stands to mask many of the complex and underlying E-mail connectivity issues for developers and net managers.

Novell intends to offer a NetWare Loadable Module (NLM) messaging engine that will function as a single gateway to IBM, Unix, X.400 or Message Handling Service (MHS) messaging environments.

The server-based software

could replace custom gateways by identifying the end point for a message sent from a NetWare client and translating the data into the appropriate E-mail format to reach the message's intended recipient.

Novell's strategy makes sense because it enables developers to concentrate on writing E-mail applications. Otherwise, software houses must develop underlying transport code to connect a particular E-mail front-end program to any of several messaging environments.

For end users, such a setup would make it easier to send messages to anyone in the enterprise network, regardless of the type of E-mail system used. While gateways can handle translations, too, they are usual-

ly limited to a single environment and offer little diversity in front-end application support.

Novell's goals appear to have users' best interests in mind, but for the strategy to be effective, the company will have to open up programming interfaces so third parties can create NLMs to operate with its multiprotocol messaging engine.

But at least Novell has boldly taken that first step. The vendor has planted a stake in the ground to indicate that universal E-mail connectivity is its primary goal.

Should other vendors follow suit and focus on providing enterprise-wide E-mail connectivity for local-area network workstations, net managers and end users will be the ultimate winners. □

OPINIONS

E-MAIL

BY CARL WARREN

Abuse of company facilities for E-mail must be curbed

Electronic mail has become such an important local-area network application that, like the telephone, everyone wants and even demands it. But unfortunately, also like the telephone, E-mail is an easy target for abuse and, therefore, causes problems for the network manager.

To circumvent potential problems, it's a good idea for network managers to establish user rules about the appropriate use of E-mail. At McDonnell Douglas Space Systems Co., long broadcast messages — which could bring a net to its knees — aren't allowed without prior approval of both human resources and the net manager. They definitely aren't allowed during periods of peak net activity.

Like 900 numbers, which have cost companies hundreds of thousands of dollars, sending E-mail via unauthorized or unnecessary connections to outside networks can also cost companies money, in the form of packet chargebacks and CPU processing costs to manage the routing of messages. Unauthorized messages may imply a problem that is more serious than just network abuse. For example, unhappy employees can pass on privileged company information with little or no chance of being caught.

Another issue related to the corporate abuse of E-mail involves the privacy of information contained in electronic mailboxes. One issue that supervisors and network managers must work out is whether they should be allowed to read E-mail exchanged between employees.

There is a difference between

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monitoring and just plain snooping. Monitoring involves electronically looking for key words such as curses or addresses to which users should not be sending mail in the normal course of their work. Snooping, on the other hand, entails opening the E-mail message and revealing its entire contents. Monitoring is most likely a good practice. However, not all industries, or even departments within the same company, need the

Unauthorized messages may imply a problem is more serious than just net abuse.



same rules about such issues. But in any case, messages that have been flagged as suspect should be discussed by the employee and supervisor with the decision of whether to reveal the contents of the message left up to the employee.

At some companies, users can do both work-related activities, such as sending a message to their counterparts at a company in Denver, and personal chores, such as checking on vacation reservations in Las Vegas, right from their desktops. Doing so costs them nothing. Unfortunately, such use of company resources can be as costly as a phone call to the company. In addition, most companies have a stated policy regarding using company resources for personal business and such actions violate that policy.

Most mail systems, such as Microsoft Corp.'s E-mail for the Macintosh, offer capabilities

such as X.400 connections, the ability to send facsimile messages and other features. A good network administrator must ensure that the proper controls are in place and that a user isn't given the ability to use a feature unnecessarily. Sending a fax nowadays is so inexpensive that even the smallest of companies can do it. But should every user of E-mail have the ability to order pizza using the net's fax ability?

In addition, for some people, accessing other companies and institutions via the Internet is important, but net managers must carefully review who really needs access to it. For example, those in charge of maintaining the warehouse most likely need only minimal E-mail functions. Fax and Internet access probably will not enable them to do their jobs better.

Notably, not even in technologically advanced California do laws exist governing E-mail use and abuse. Thus, U.S. firms can and do routinely examine E-mail for abuse such as personal communications without fear of legal action. In those same companies, supervisors aren't allowed to monitor either employees' phone calls or U.S. mail.

From the outset, it would appear that monitoring E-mail to ensure the system isn't being abused is reasonable. But that monitoring must be limited to avoid exposing the organization to possible legal battles and civil rights violations. The best approach might be to establish easily understood written policies regarding both the use and monitoring of E-mail.

Even with a need for a clear policy statement outlining E-mail guidelines, some leeway is needed. In most cases, once a policy exists, you will find that a spot check will serve the purpose and violators will be easily spotted. □

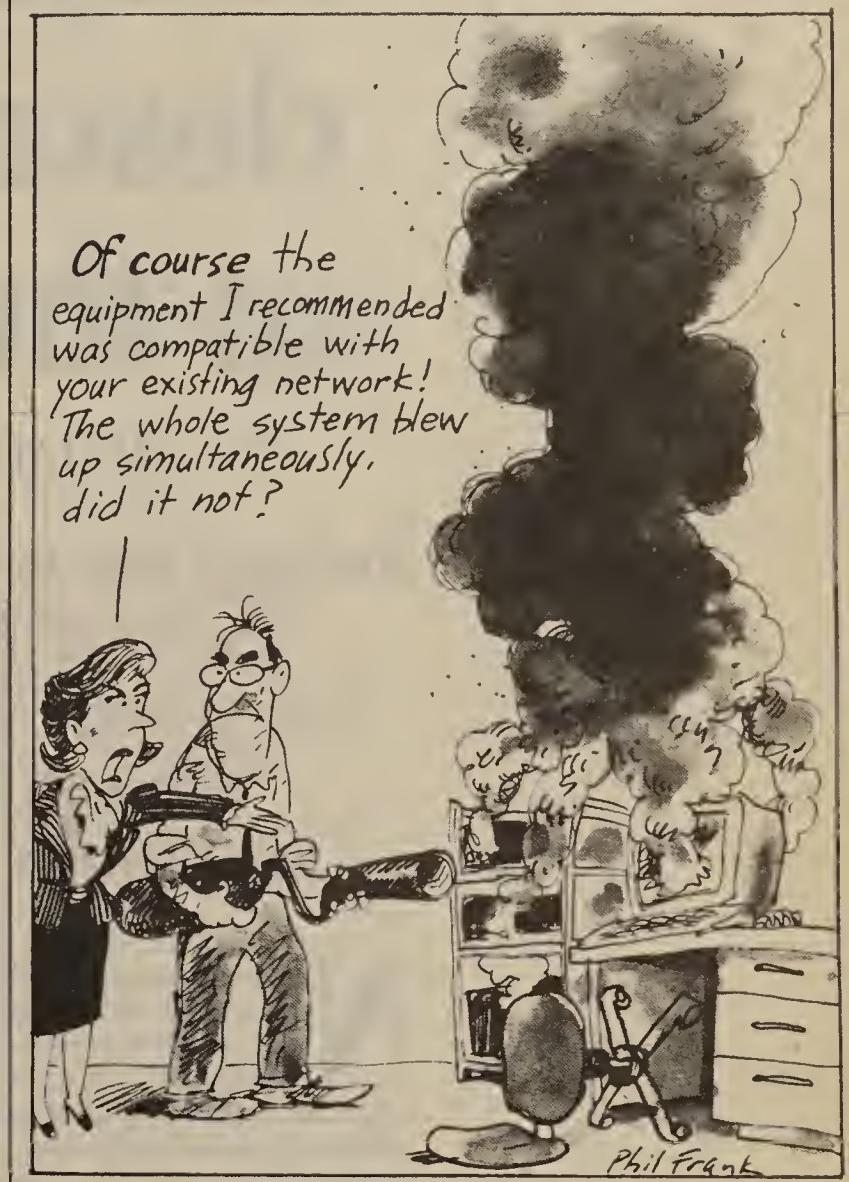
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TELETOONS

BY FRANK AND TROISE



LETTERS

IISF a waste of time

I'm writing in response to your recent article "Group calls for int'l security organization" (NW, March 16).

The proposed International Information Security Foundation (IISF) is a waste of time, energy and funds. It consists primarily of frustrated information security specialists and security product salespeople seeking ways to mandate information security solutions.

However, mandated solutions do not eliminate business exposures. Imposing a solution without justifying how it reduces your security risk adds needless expenses to operations that already return low margins.

Organizations that generate standards that are voluntary rather than mandatory already exist — ANSI and the International Standards Organization, for example.

The advantage of voluntary standards is that they can be applied when justified.

No business would seek sup-

port from the IISF's proposed computer emergency response teams. Most users are unwilling to share such grave issues with inexperienced outsiders that may have other goals, such as promotion of a standard security product.

The organizer, overseer and fund-raiser for IISF has been promoting the same ideas for the past 10 years, with limited acceptance. Some in the industry feel that the efforts are misdirected because they solve problems that can be solved by in-hand solutions or techniques.

Donald Miller
Vice-president
The First National Bank
of Chicago

Network World welcomes letters from its readers.

Letters should be typed and double-spaced. Mail them to Editor, Network World, 161 Worcester Road, Framingham, Mass. 01701.

Letters may be edited for space and clarity.

Taking a closer look at the DCE

By MICHAEL MILLIKIN

Probing the inner workings of the DCE reveals the technology will open new network worlds to application developers.

Network managers and software developers at Citibank, N.A. are pioneering the use of a technology that enables them to explore new methods of building distributed applications for multivendor networks.

Citibank is devising a prototype transaction processing application that will enable a Sun Microsystems, Inc. workstation user to request information from an IBM RISC System/6000 server, which in turn will ask an IBM MVS mainframe to download the data across the net.

The unorthodox aspect of the project is that Citibank is relying on an integrated set of operating system- and net-independent services called the Distributed Computing Environment (DCE) to achieve transparent connections between the systems. By employing the DCE, Citibank developers can concentrate on the application itself rather than devising application enablers.

Until now, with this type of development effort, Citibank would have had to spend months painstakingly piecing together custom

Millikin is a principal with Gunstock Hill Associates, a Gilford, N.H., consultancy.

code to get the various devices to work in harmony.

Although Citibank is using the DCE to discover a new world of application development, the technology promises to transform the entire industry's distributed computing landscape.

The DCE, which the Open Software Foundation, Inc. (OSF) announced in May 1990, is a technology many users will likely end up licensing from systems and network vendors. Most of the major players have committed to using the DCE as the basis for future systems and network software.

Some large end users who are developing their own distributed applications, such as Citibank, have already gone directly to OSF and licensed Snapshot, an early release of the software.

The key benefit of the DCE is transparency. Users can't spend time thrashing about trying to figure out where a file is located. Developers shouldn't have to code the locations for resources over the net into their applications, nor should end users have to worry about mounting remote volumes. From an MIS viewpoint, the network should be manageable (see "Bringing the DME into sharper focus," page 27).

The DCE makes all that possi-



ble. It is actually a hodgepodge of technology submissions from vendors worldwide who vied for the opportunity to influence design of the final DCE architecture.

Currently, the DCE consists of a set of services organized into two categories.

The first grouping is fundamental distributed services, which provide programmers with the tools necessary to create distributed computing applications. These include threads, remote procedure calls (RPC), directory, time and security services.

The other category, data-sharing services, provides users with capabilities built on top of the fundamental distributed services. These services require no programming effort and provide the basis for efficient information use across a network. They include a distributed file system and personal computer integration consisting of MS-DOS file

and printer support services.

In the future, OSF plans to address spooling, transaction processing and distributed, object-oriented environments.

Common threads

The DCE's Threads Service provides portable facilities that allow a programmer to build an application that performs many actions simultaneously. For instance, while one thread executes an RPC, another can process user input.

By contrast, applications traditionally have dealt with a single thread of control.

Threads Service is used by other DCE components, such as RPCs, Security, Naming, Time, and the Distributed File System.

Threads Service includes operations to create and control multiple threads of execution within a single process and synchronize access to global data

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Bringing the DME into sharper focus

By JAMES HERMAN

On close inspection, the OSF's DME stands out as a significant step toward distributed net management.



ILLUSTRATION ©1992 FRED LYNCH

Management of distributed, heterogeneous computing environments is one of the most difficult problems users will face in the years to come. This will be readily apparent after they've installed communications equipment to interconnect client/server-based work groups comprised of different microcomputers, minicomputers and mainframes running applications from a mix of vendors.

Guaranteeing reliable operation and good performance in such an environment will be quite a challenge. Users will need a new generation of management tools to tune, troubleshoot and update these networks as well as the sys-

Herman is a principal with Boston-based Northeast Consulting Resources, Inc., a consulting firm that focuses on strategic management and information technologies.

tems attached to them.

But before users can step up to the task, developers need the raw materials that will enable them to easily build those tools.

That's where the Open Software Foundation, Inc.'s (OSF) Distributed Management Environment (DME) comes in.

Last September, OSF detailed its intention to assemble software technology from multiple vendors to build the DME, a package of distributed services and well-defined application program interfaces (API) that are crucial to accelerating development of applications to manage distributed systems and multivendor networks.

The DME strategy is similar to OSF's effort to create its Distributed Computing Environment (DCE), a set of tools that enable developers to build distributed applications. In fact, the DME will utilize the DCE services to build applications that will manage

other DCE-based applications (see "Taking a closer look at the DCE," page 26). OSF believes the DME will be critical to acceptance of the DCE technology.

Along with the definition of the Simple Network Management Protocol, the DME is the most important step toward integrated management that the industry has taken so far.

What's it all about?

DME APIs and corresponding services comprise a management platform that allows separately developed software modules to freely communicate and interact. The DME is the first attempt to define standard distributed systems management services, such as network-based software distribution and licensing, user administration, distributed printer management, and remote monitoring and control of servers.

The OSF's establishment of a set of vendor-neutral management APIs is a watershed event in the communications industry's long-standing effort to tackle the multivendor management problem. Although the open management platform concept has been gradually gaining acceptance, the only platform offerings to date are vendor-specific, most notably Digital Equipment Corp.'s DEC

Management Control Center Director, Hewlett-Packard Co.'s OpenView and SunConnect's SunNet Manager.

The DME will make it easier for equipment makers and independent software vendors to develop management applications by providing a lot of the complex underlying technology, rather than requiring each vendor to recreate it. Many vendors will build DME applications running on different kinds of hardware and operating systems, thus maximizing users' options in choosing a management system. This will increase competition, lower costs and spur innovation.

Once the DME is available and DME-compatible applications proliferate, users can choose the applications they need to manage their particular collection of networks, servers and desktops — in effect, assembling a management strategy from plug-and-play software pieces.

The DME breaks new ground in software development because it utilizes advanced object-oriented software technology. OSF argues strongly that this powerful new approach to structuring software will solve the complex distributed systems management problems that users say are their

(continued on page 29)

Taking a closer look at the DCE

continued from page 26

within an application.

This threading capability becomes particularly important within the context of an RPC, for instance. RPCs, by nature, are synchronous operations. A client makes a call for a remote function and then waits until the request is fulfilled. With threads, however, one thread can make the request while another begins to process data from a different request. Threading can greatly improve the performance of a distributed application.

Threads Service puts less demand on the skill of a programmer than on other alternatives such as explicit asynchronous operations or shared memory. Asynchronous interfaces, although they've existed in some environments for some time, can be complex to implement. In the commercial world, where the reeducation of programmers can be a major cost drain, the less retraining a new technology requires, the better.

Remote calls

RPCs are one of the tried-and-true modes of implementing distributed processing. Their function is to make procedures in an application run on a computer anywhere in the network.

RPCs handle the nuts and bolts of distribution, such as the semantics of the call, binding the client to the server or communications failures. In theory, the programmer doesn't have to become a communications expert to write a distributed network application. Programmers use an interface specification language to detail remote operations. Compiling those routines then produces code for both the client and the server.

The benefit of such an RPC approach is that it provides simplicity to the programmer. RPCs adhere to the local procedure model as closely as possible while providing the distributed aspects of applications in a straightforward manner. In other words, it foists less of a conceptual change on developers, thus reducing retraining time. This is especially important for in-house corporate

development teams.

Regardless of the transport protocol used, RPCs provide identical behavior within applications and keep the management of connections invisible. This means developers don't have to rewrite applications to support different transport services. The RPC interface supports a variety of transports simultaneously and allows the introduction of new transports and protocols without affecting the coding of the application.

RPCs also fit in well with other DCE components. RPCs, for instance, interact with the authentication system to provide secure communications (see graphic, this page). They also interact with client and server threads, preserving the synchronous interface while allowing the client and server to exploit concurrency.

Directory services

Locating objects — users, servers, data and applications — in a distributed network is the task of the DCE's Distributed Naming Service (DNS). The service enables programmers and end users to identify resources such as servers, files, disks or print queues by name, without knowing their location in a network.

OSF specified a two-tiered architecture for DNS to address both intracell and worldwide communications. The cell is a fundamental organizational unit for systems in the DCE. They can map to social, political or organizational boundaries and consist of computers that must frequently communicate with one another — such as in work groups, departments or divisions of companies. Generally, computers in a cell are geographically close and each cell ranges in size from two to thousands of computers.

There are four elements in the DCE's DNS: the Cell Directory Service (CDS), Global Directory Agents (GDA), the Global Directory Service (GDS) and the X/Open, Ltd.'s X/Open Directory Service (XDS).

The DCE's CDS handles directory queries from clients in a cell. It looks at the first part of a file name, for instance, to determine if the data resides in the cell. If it does, it supplies the data. If not, it passes the request to a GDA, which does the lookup in the GDS and feeds it back to the client through the CDS. The requesting client can then issue a direct call to the CDS with the file location data. CDSs typically reside on multiple servers in cells across the network.

The GDA, in effect, acts as a naming gateway that connects the DCE domain to other administrative domains through either

an X.500 worldwide service or the Internet name service.

Support for the XDS allows developers to write applications independent of the underlying directory service architecture. XDS is an application program interface that uses X.500 as the main directory service if an organization so wishes. An XDS-compliant application will work unmodified with DCE and X.500 services.

Distributed Security Service

The DCE's Distributed Security Service (DSS) offers several

DSS also comes with an authorization service. The DCE supports authorization checks based on Portable Operating System Interface-conformant access control lists (ACL) and an authentication interface to RPCs.

OSF allows applications for the DCE to be portable from Kerberos to public key authentication schemes, such as those provided by RSA Data Security, Inc. of Redwood City, Calif.

Distributed File System

The DCE's Distributed File

capability is important because of the latencies inherent in WANs.

To maximize file access performance, DFS caches frequently accessed files on a workstation's local disk. When a user accesses data on the file server, a copy of the data is cached locally. When the user is finished working with the data, a local cache manager writes the data back to the server. To prevent problems from arising when multiple users on different computers access and modify the same data, DFS uses a token management scheme to coordinate file modification.

File tokens are allocated to a client by a server when the client caches data locally. If a client wishes to modify a file, it must request a write token from the server, which allows it to make changes. This setup ensures that clients holding read-only tokens will be notified their files are no longer valid in the event of a file change and are issued updates.

By contrast, other file systems do not maintain information about which clients have copies of information and, therefore, are stateless. They merely specify local data is no longer valid. The downside is that a user could be working with an outdated file.

Distributed time service

Distributed network systems need a consistent time service to synchronize operations on computers across the network.

In the DCE, a time server is used to provide time to other systems for the purpose of synchronization. Any non-time server system is called a clerk. Distributed Time Service (DTS) uses three types of servers to coordinate network time. A Local Server synchronizes with other local servers on the same local-area network. A Global Server is available across an extended LAN or WAN. A Courier is a designated local server that regularly coordinates with global servers. Servers can obtain the official Universal Coordinated Time from standards organizations via shortwave radio, dial-up lines or satellite.

At periodic intervals, servers synchronize with every other local server on the LAN via the DTS protocol.

PC Integration Service

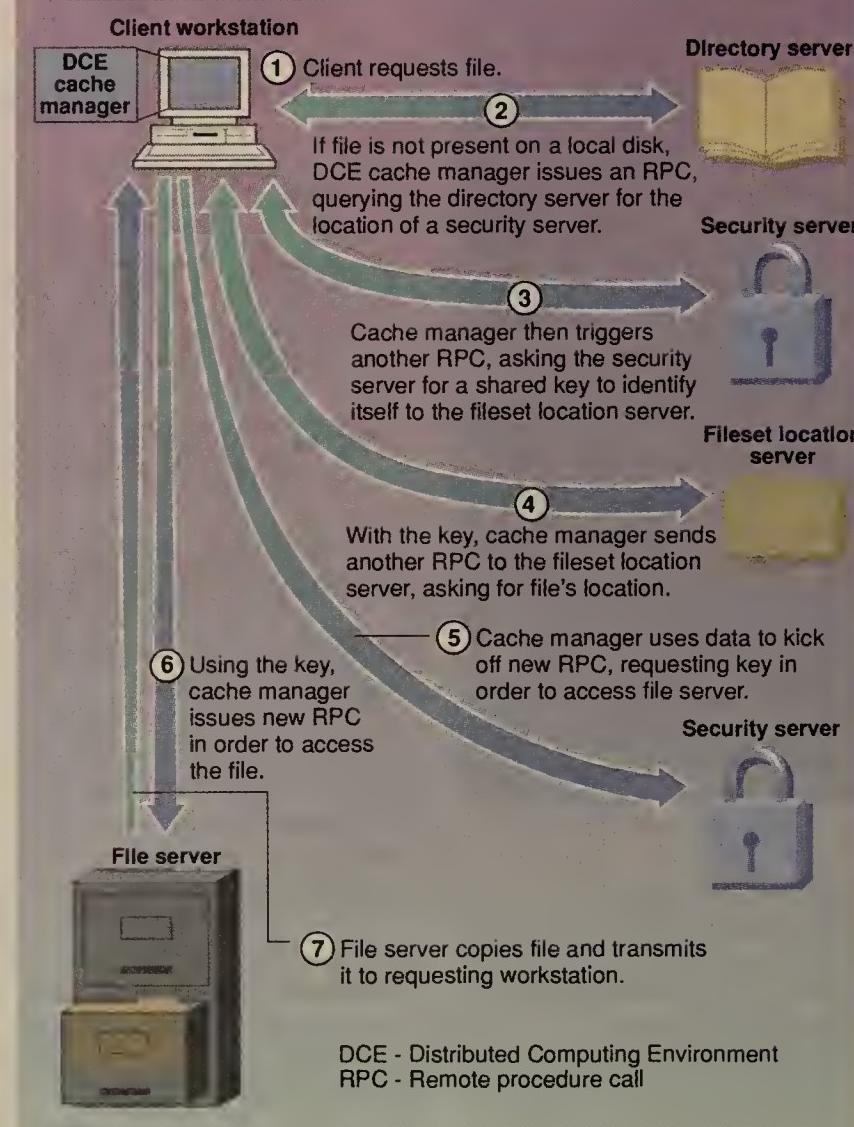
The DCE isn't really a DOS-oriented technology because of the limitations of the DOS environment in terms of memory, multitasking and other factors. But recognizing the market need to support PCs, OSF devised the PC Integration Service (PCIS).

PCIS is focused on providing DOS clients with access to file and print servers. Clients can perform normal DOS file operations on remote files and share servers'.

(continued on page 29)

The road to implementing the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE) is not always the smoothest path. In this week's Alligator in the Swamp (page 43), one user details the obstacles he encountered in redesigning a network to support the DCE and how he overcame them.

How the DCE handles a client request



GRAPHIC BY SUSAN SLATER

SOURCE: OPEN SOFTWARE FOUNDATION, INC., CAMBRIDGE, MASS.

levels of security. The DCE uses the Kerberos authentication system, which was developed by the Massachusetts Institute of Technology under its Project Athena.

Kerberos uses private key encryption to provide three levels of protection. The lowest requires only that user authenticity be established at the initiation of a connection, assuming that subsequent network messages flow from the authenticated principal. The next level requires the authentication of each network message. On the level beyond these, safe messages are private messages, where each is encrypted as well as authenticated.

End users should be minimally affected by the net-based service. In other words, you shouldn't have to memorize dozens of passwords or codes. A great deal of the security benefits stems from this network service managing a user's access, or authorization.

System (DFS) is intended to provide transparent access to any file sitting on any node on the net, provided clearance is obtained.

DFS is based on Transarc Corp.'s Andrew File System (AFS) Version 4.0., which OSF opted for over Sun's Network File System (NFS). DFS software resides on each net node. DFS integrates each node's file system with DCE's directory services, ensuring a uniform naming convention for all files stored in DFS.

OSF chose AFS because it allows users to address files with the same pathname from anywhere in the network, regardless of the user's computer.

It uses DCE's Security System with ACLs, which control access to individual files. An RPC streaming function allows DFS to move large amounts of data through a wide-area network in one burst rather than dribbling it across in smaller packets. This

Bringing the DME into sharper focus

continued from page 27

primary challenge today.

DME objects are pieces of software that define information about a device, such as performance and configuration data. They also contain methods, which include software routines needed to retrieve data from network devices and instructions for processing the data as well as displaying it on

workstation screens.

OSF promises that the DME will be easily extendable through the addition of new objects. The object-oriented approach will hide many of the minute differences between vendor devices, resulting in a system that will be far easier to use than today's tools, most of which merely give users access to an overwhelming wealth of detailed data and leave them to sort through it without assistance.

DME-based applications can utilize common object, management and application services as well as a common user in-

terface. Since the DME is layered on top of the DCE, developers can also utilize the DCE's naming, security and distributed file access services, thus enabling them to build distributed applications for managing distributed systems.

Finally, the DME also utilizes the Common Management Information Protocol (CMIP) and SNMP, which make limited use of object-oriented technology, as well as a management protocol that uses the DCE's remote procedure calls, to transport data between workstations running DME applications and managed devices.

Above all, the ability to grasp object-oriented concepts is key to understanding the DME. The OSF chose to go beyond the object-oriented data definition ideas in CMIP and SNMP to a DME that supports object-oriented software development. Once created, objects are stored on one or more servers running DME software. Objects are accessed and their methods activated by inserting software calls into applications using DME APIs.

In the DME, an object represents a network, system resources and management

(continued on page 30)

Taking a closer look at the DCE

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print capabilities. OSF originally selected Hewlett-Packard Co. and Microsoft Corp.'s joint development, LAN Manager/X, as well as the client implementation of SunSoft's PC-NFS, to integrate PCs into the DCE.

That does *not* mean the DCE will only support LAN Manager/X environments. The DCE is designed to be ported to any operating system, and vendors already offer implementations on DOS, Microsoft Windows and other software platforms. In addition, vendors plan to support the DCE in Digital Equipment Corp. VMS and IBM MVS environments, as well.

Users who wish to integrate PCs as peers in a DCE network can turn to third parties, such as Gradient Technologies, Inc., for a full Windows-based implementation of DCE client software. This would provide Windows users with full access to distributed applications on the DCE network, for example. At some point, network operating system vendors, such as Novell, Inc., will want to or need to deliver DCE support as part of their network solutions.

Extending and using the DCE

This is not to say that the DCE is perfect. Plenty of opportunities exist for enhancement, some of which OSF will handle, and others that vendors and users will tackle.

Transarc, which provided the basis for DFS, has released its Encina extensions for transaction processing based on the DCE. Major systems vendors, such as DEC, HP and IBM, are busy implementing and delivering elements of the technology. Transarc offers a DCE developer's tool kit, and IBM should follow with its own soon.

The University of Massachusetts at Amherst is using the DCE as a foundation for providing an advanced computing environment called Project Pilgrim. The university is completing its own distributed printing, mail and event notification services to layer on top of the DCE.

With all the discussion about the DCE over the past few years, it is easy to forget the software is just now making its impact on the market. Tool kits are appearing, and pioneering users — such as Citibank — are beginning pilot developments.

While the industry is still several years away from widespread deployment, the power of OSF's DCE in concept and in action is the creation of a consistent, multi-vendor platform. With users beginning to explore the technology and vendors bringing out new products that support the DCE, it appears the industry is taking its first step down the road to truly transparent interoperability. □

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Bringing the DME into focus

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resources such as an event log or report. DME applications will enable users to manipulate objects on a workstation screen by using a mouse and a graphical user interface to look at the data stored within an object or invoke a process that might cause a test to be performed or a special measurement to be made.

The DME also provides an API that allows non-DME applications to manipulate objects in similar ways. DME objects themselves can utilize DME APIs, thus enabling objects on one server to communicate and interact with objects on either the same server or a different one in order to perform a series of complex tasks.

The DME will enable a router vendor to supply a router object to run on a DME management server. The object could contain not only standard Management Information Base (MIB) data definitions for CMIP and SNMP, but also object methods for interacting with the router to perform management functions, such as downloading software, running diagnostic tests and analyzing traffic.

The router object could also contain instructions on how to display information or draw the object's icon on a workstation screen. In this way, everything needed for a user, an application or another object to work with the router is contained within the router object. This idea is called encapsulation.

Object Services is the DME's key component. Usually referred to as the Framework, it provides the core services of the platform and has three major subcomponents:

Management Request Broker (MRB). Applications use the MRB to instruct an object to perform certain operations such as generating a report or retrieving performance data. The MRB locates the object, using the DCE directory service. To make sure these interactions were generated by an authorized operator using an authorized management server, the DME uses the authentication service found in the DCE.

The MRB is based on technology from HP's OpenView and Tivoli Systems, Inc.'s WizDom. A major unanswered question concerning DME is the degree to which OSF will be able to integrate the two.

The HP portion of the MRB allows an application to use either CMIP or SNMP to transport management information to and from a managed device. It is similar to existing management systems currently on the market and provides basic backward-compatible

services needed to adapt existing applications to the DME platform.

The API for these services — the Consolidated Management API (CM-API) — was jointly designed by HP with Groupe Bull SA. CM-API is also being adopted by X/Open Company, Ltd. as part of its Portability Guide.

The other half of the MRB, however, breaks new ground. Using technology from Tivoli, it allows applications to invoke object methods by sending messages to an Object Server. This part of the MRB provides an API named objcall, which can be used by applications written in the ANSI-C programming language. The API provides a message-passing service that locates the object server where the target object is stored.

Object Server. Object servers are software environments where DME software objects reside. Object servers activate object methods in response to received messages. The MRB will support multiple kinds of Object Servers. In its initial offering, the OSF will deliver two servers, one from Tivoli and one from IBM.

Tivoli's Object Server, based on WizDom, allows object methods to be written in ANSI-C, a shell-script language or the language of the developer's choice.

These methods, because they are separate processes, can be any piece of software, including existing management applications. Thus, with very little effort, nonobject-oriented applications can be encapsulated within DME objects, providing users with a unified approach to accessing management software.

The second type of Object Server is based on IBM's Data Engine, an object-oriented software environment that IBM built to support development of new software to manage the National Science Foundation Network. Data Engine requires object methods to be written in C++ or an IBM-created fourth-generation language called Object Implementation Language.

Event Services. OSF chose an event management service from Banyan Systems, Inc. to gather, filter and forward CMIP events, as well as events generated by applications or systems software. Events are general-purpose alarms that can be created in response to errors or triggered by periodic tasks.

DME applications can use the service to request certain types of events. Event services will be integrated with both types of MRB and their respective APIs. Among other things, this integration will allow event notifications to invoke object methods (see graphic, this page).

Although developers consider

Object Services the most important part of DME, User Interface Services will be the most important to users. Ease of use requires that many management applications share a common user interface, which is provided in the DME by the HP OpenView Windows for DOS graphical map application and is based on OSF's Motif.

The DME will also support a simple command line interface. In addition, the DME will contain a set of tools for defining objects, specifying event routing and working with the user interface.

OSF chose to incorporate four important application services into the DME. Although simple applications using these services will be shipped with DME code, OSF hopes developers will use these services to produce more sophisticated applications.

A software distribution and installation service is based on HP's Software Distribution Utilities. The service supports network-based distribution as well as in-

oli's Host/User/Group/Subnet package that deals with configuration of host parameters, such as network addresses, network terminals and access to network services.

Making the DME a reality

OSF is currently in the process of integrating the pieces of the DME and adapting them to use DCE services.

OSF will be the prime contractor for this integration effort, which is now in full swing. However, it will not commit to a date for first release since it is still evaluating how to do the integration and how much work will be included in the first release.

Northeast Consulting, Inc., a consulting firm based in Boston, feels the first full release will hit the market in the first quarter of 1993.

Computer system vendors, such as DEC, HP and IBM, will then take OSF's software and integrate it with their own management products. DME software will replace some elements of existing management systems but not all of them. The rest will have to be adapted to work with DME software.

Before then, OSF will publish DME API specifications and probably produce a tape with the un-integrated DME code so that developers can get started in evaluating the DME. These early efforts are aimed at getting vendors quickly aligned with the DME so users can start getting management software that will be easy to migrate to DME.

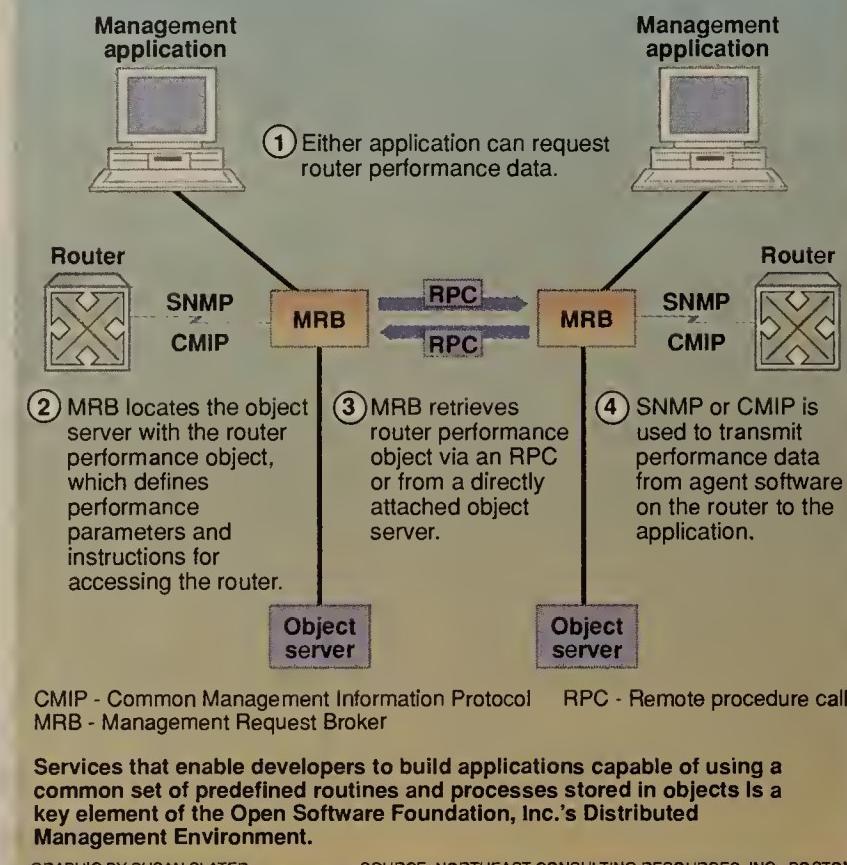
The CM-API is straightforward and will most likely be the first part of the DME to be widely endorsed. It is probable that a number of vendors will incorporate CM-API into their own management systems without waiting for the DME, thus claiming DME compatibility before the end of this year.

To implement the objcall API, vendors will have to wait for OSF's version of the DME. Therefore, it will be more like the end of next year before it is incorporated into vendor offerings.

The DME is a critical part of the user-driven open systems revolution. Through the DME, OSF is leading the effort to define open, vendor-neutral APIs for management applications. If users and vendors support the DME, the result will be a common set of standards and more rapid progress toward solutions for managing distributed, multivendor systems.

The object-oriented DME is a powerful technological advantage in the battle against a very difficult problem. Users should take a close look at it and question their vendors closely on how they will support it. □

How the DME retrieves object data



GRAPHIC BY SUSAN SLATER

SOURCE: NORTHEAST CONSULTING RESOURCES, INC., BOSTON

If the object-oriented portions of DME catch on — and there appears to be no reason for them not to — the DME will become a library of software objects that must be organized, cataloged and protected against unauthorized use. The Management Services component of the DME will aid in this task by enabling users to group objects into collections and domains.

In addition, it provides software hooks for creating policy objects, which contain company-specific rules for processing information. OSF wants to make sure rules that reflect a particular company's policies are separated from DME applications.

For example, user names must be entered into a user administration application. The structure of a user name is a policy issue that should access a policy object in order to validate a supplied user name.

Management Services also provides the ability to define different access and execution permissions for different types of DME users. For example, a work group system administrator could only make changes to ob-

jects defining resources in that work group, while a wide-area network manager might be able to alter any DME object.

A distributed printing service provides for management of network printing. The Massachusetts Institute of Technology's Palladium Print System Version 2, which was developed as part of MIT's Project Athena, is the basis for this service.

A distributed licensing service provides the ability to support sophisticated software licensing schemes.

When users access an application, a license unit is dynamically allocated by the license server, which is controlled through a license password issued by the software supplier. The license server keeps track of how many copies of an application have been used and whether a system asking for that application is authorized to use it.

HP's Network License System Version 2.0 and a related package from Gradient Technologies, Inc., which extends the system to PC applications, provide this service.

Finally, the DME includes a distributed host management application service provided by Tiv-



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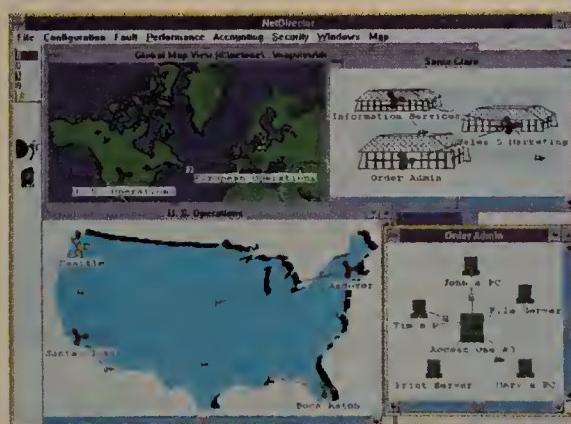
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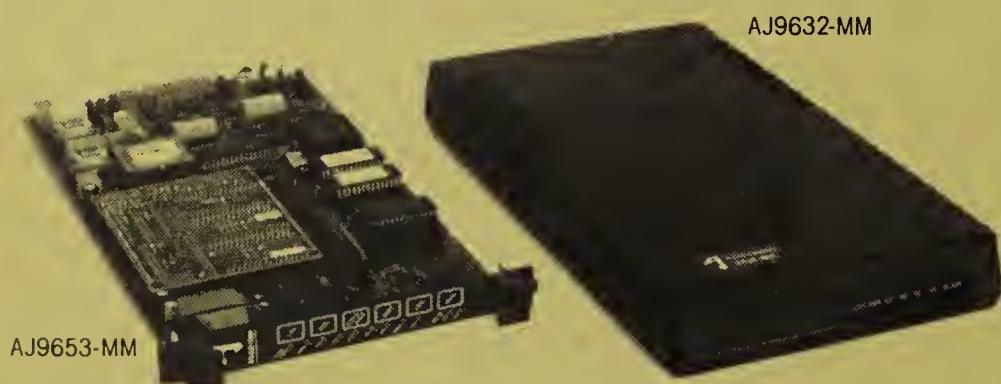
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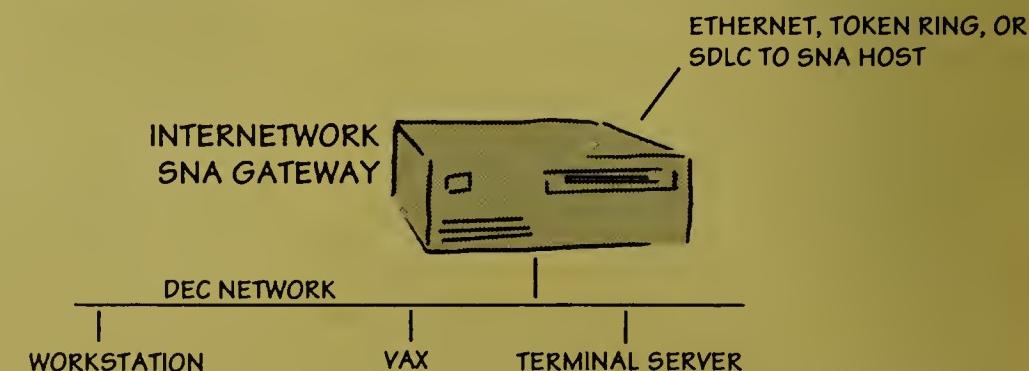
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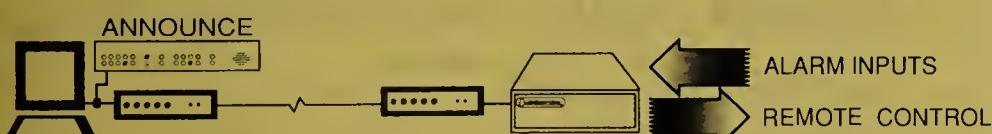
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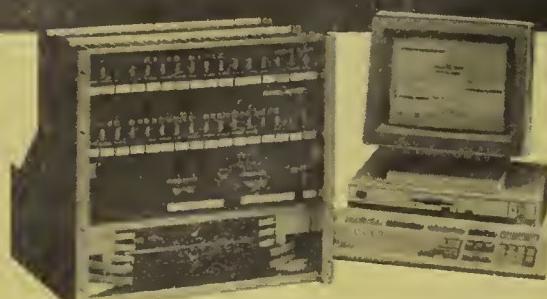
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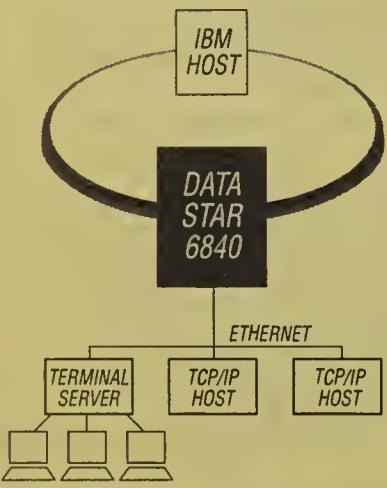
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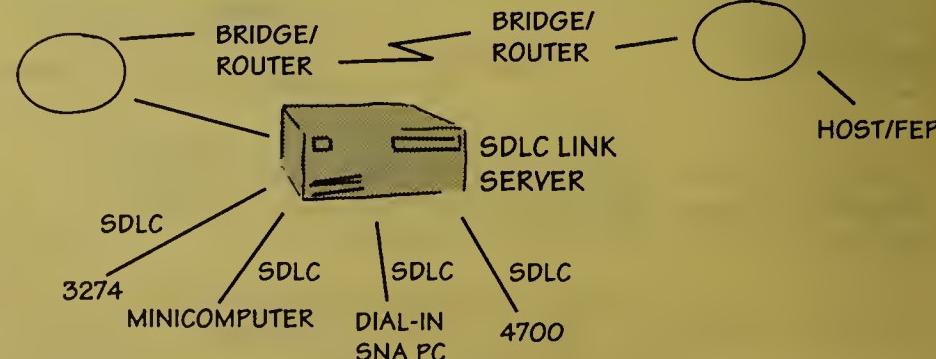
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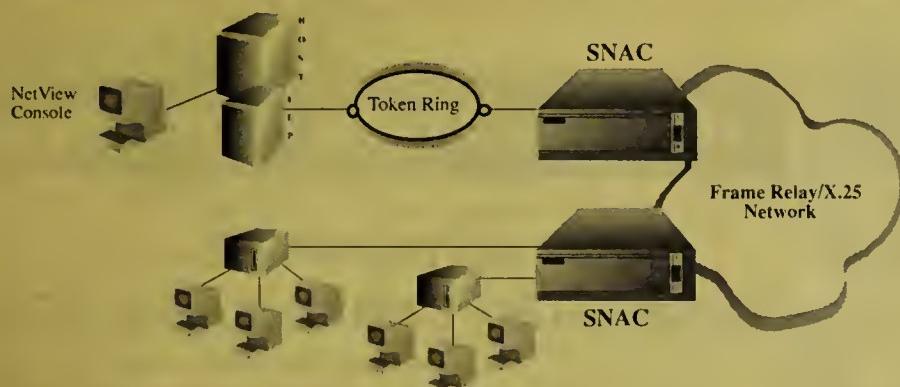
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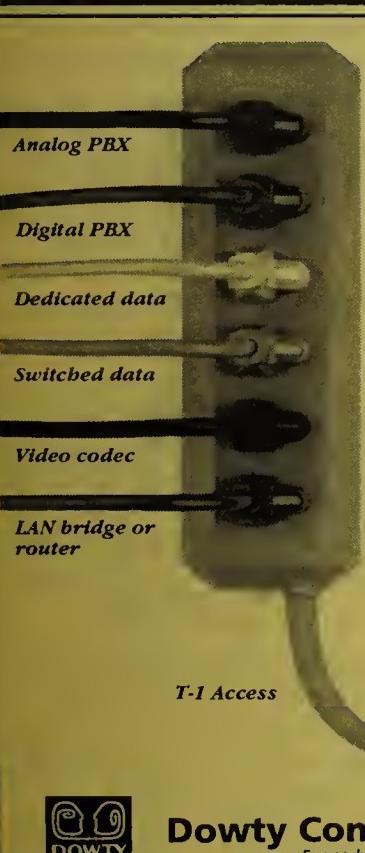
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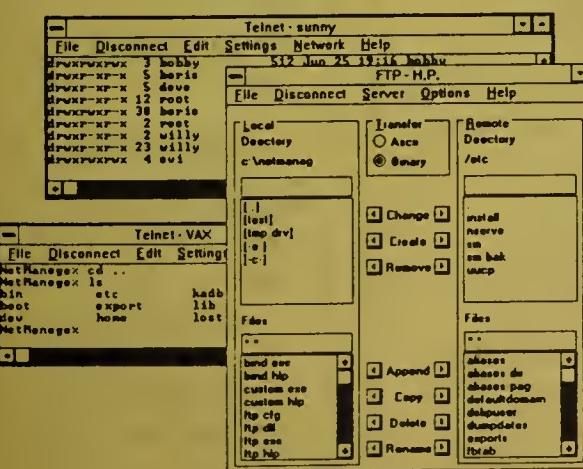
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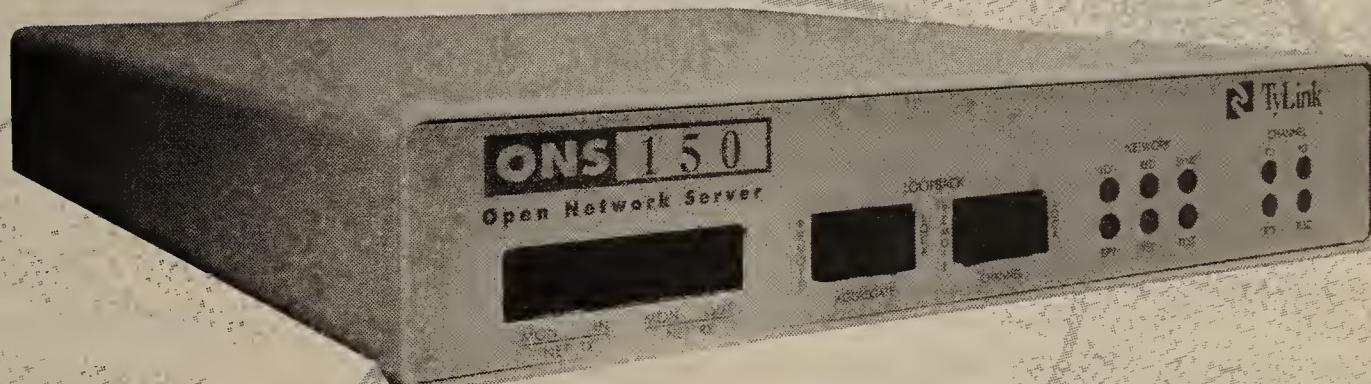
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IBM maps out SNA strategy

continued from page 1

APPN nodes and topple the hierarchical maze that was SNA. Additionally, users will be able to expand networks more rapidly without having to define each step to VTAM.

VTAM will be able to support APPN end nodes or network nodes on its own or can form a composite network node in conjunction with the Network Control Program (NCP). A new version of NCP, which analysts expect to be announced this summer, will be required to form the composite network node.

The composite node will be able to handle both traditional SNA flows and APPN, while the new VTAM hosts can handle solely APPN nets.

Because VTAM 4.1 contains network node, end node, control point and central directory server support, analysts said users can set up networks with or without NCP.

"If users have two VTAM hosts and one NCP, they could turn one VTAM into an application server end node and the other into a composite network node to handle communications," Passmore said. "The application end node no longer has to worry about network topologies and has more cycles free to perform applications."

Because the new VTAM does not require NCP for APPN communications, users do not need NCP with all of their VTAM hosts.

The APPN central directory function, new with VTAM 4.1, reduces logical unit and SNA path definitions, making system configuration and performance more efficient. The central directory contains all attached APPN resource locations and defines the most efficient routes. Although only in VTAM now, IBM indicated directories will be included in future releases of OS/2 and OS/400.

"The central directory is a must for larger SNA networks," said Gary Weis, senior vice-president of Sears Technology Services, Inc. in Schaumburg, Ill. "We have 18,000 locations with over 400,000 logical units and

possibly 200,000 network nodes. If those network nodes want to find resources, they'll be broadcasting all day and no work would be done. The centralized feature takes care of that."

The new version of VTAM also lets users migrate older 3270 applications to the APPN network. A dependent logical unit server feature in VTAM and a requester residing in new 3174 Configuration Support-C Release 2 software, also announced last week, support old applications participating in the new SNA.

In this configuration, the 3174 acts as a gateway, encapsulating 3270 data in LU 6.2 sessions for routing over the APPN network but with limitations.

Today, in order for the dependent logical unit to transmit through its 3174 gateway, the logical unit always has to be connected to the same boundary node, which is the entry point to an SNA net for terminals.

"In a future release, that node can be attached to any boundary node in the APPN network," said Louise Herndon Wells, managing editor of the newsletter *SNA Perspective*. "It's a single hop now, but it will become multihop."

VTAM Version 4.1 for MVS with APPN support will not be available until the first quarter of 1993, at the earliest. Under a new Quality Partnership Program, the new version of VTAM will be shipped to select customers in October for beta testing. Once those tests are complete, VTAM will ship.

Managing APPN nets

APPN will be managed using protocols based on the Open Systems Interconnection Common Management Information Protocol and transported over LU 6.2 sessions to NetView. Analysts said a single NetView can be designated as the manager of a given set of resources. Local managers based on OS/2 or OS/400 nodes will also be possible in the future, they said.

APPN network topology data will be stored in the NetView Resource Object Data Manager (RODM) and viewed through the OS/2-based Graphic Monitor Facility. RODM, announced last September, is the central product

for integrating IBM's old network management applications with the new. With its open interfaces, RODM lets IBM, third-party vendors and user-developed applications share the same status information. Ultimately, other OSI-based systems will be able to manage the SNA host, experts said.

IBM said it intends to provide management applications on its OS/2 platform first. Those applications will collect information from and can control other nodes on the network. Analysts said these applications are needed for OS/2 first because users are developing OS/2 APPN local-area networks now.

"APPN isn't trivial to manage. It takes lots of effort and knowledge, and it shouldn't be taken lightly," said Harry Kochman, director of data communications for the Continental Insurance Co. in Neptune, N.J. "Careful planning and customization with NetView is needed."

IBM did not say in which release of NetView the APPN management facilities would appear or when the enhancements would be available.

IBM also reaffirmed its plan to support APPN network node on the 6611 router, available in the first quarter of 1993. End node and network node support will also be added to its RISC System/6000 and should be available by the second quarter of next year.

"Network node support for the 6611 will create a conflict with the duties of the 3745, a conflict the 6611 will win many times," said Atul Kapoor, a principal with Kaptronix, Inc. in Hawthorn, N.J. "It'll put a lot of pressure on the 3745 product group."

Still, the 6611 will not directly replace 3745s in all cases because it does not support channel interfaces needed to connect directly to the mainframe, according to Passmore. "The 3172 Interconnect Controller would be a better way for users to attach LANs directly."

Richard McGee, manager of IBM's communication system architecture, said APPN should help grow LANs because it works well with "Token Ring, Ethernet, SDLC, X.25 and even [twinaxial

cable], without gateways or protocol converters. It will interconnect LANs and WANs without having to encapsulate NETBIOS," as the 6611 currently does, McGee said.

"It gives users a high-performance platform to develop client/server applications or develop applications on the LAN and run pieces of them on the mainframe, AS/400 or on other vendor's platforms," he added.

Future blueprint

Attaching LANs and becoming the multivendor internetworking leader are the strategies IBM wants to pursue with its networking blueprint. The blueprint has five major thrusts: multivendor application support, application enablement, multiprotocol transport networking, high-speed network support and comprehensive system management.

IBM will begin laying out the blueprint through its support of CPI-C, remote procedure call and Message Que — the three most common application program interfaces (API). To further this plan, IBM said it will add CPI-C to its Transmission Control Protocol/Internet Protocol platforms and Networking Services/DOS, which is new low-memory Advanced Program-to-Program Communications software for DOS and Microsoft Corp. Windows users. This announcement fills out IBM's CPI-C suite, which includes OS/2, OS/400, MVS, CICS and IMS.

IBM said it would let users run TCP/IP Sockets over SNA, an application called Snackets. Sockets software allows two Unix applications to talk over TCP/IP nets.

"This announcement could signal the beginning of the end for proprietary SNA," said Anura Guruge, lead consultant BBN Communications Corp. in Cambridge, Mass. "With the blueprint, IBM is advocating the obvious virtues of writing new applications to new, strategic APIs without worrying about the underlying network."

"Given that, compared to TCP/IP and OSI, APPN is still an emerging networking scheme that needs to be refined before it is a true heir to SNA," Guruge said. □

NNL: lots of code, money

NEW YORK — If you're willing to shell out \$400,000 plus royalties, you can license IBM's network node specification.

Sources said that is the asking price for access to the 110,000 lines of C language code and the developer's kit needed to grow network nodes.

IBM last week announced it would license the code to Network Equipment Technologies, Inc. (NET), 3Com Corp. and Systems Strategies, Inc.

The three companies will also beta-test the developer's kit, which will be available in the first quarter of 1993.

Novell, Inc. said it has not yet licensed the specification but is considering including network node support in NetWare for Systems Application Architecture (SAA), which would help tie NetWare users to Advanced Peer-to-Peer Networking (APPN) nets.

IBM indicated that 15 to 20 other companies are also in negotiation for the network node technology.

None of the vendors would confirm the licensing fees.

"We feel licensing the network node will help our Unix customers attach [their products] to IBM APPN resources," said Stanley Adelman, president of Systems Strategies, a communications software vendor based in New York.

Adelman said the network node support would go in the company's Express Unix-to-mainframe software.

"We won't build it in for a couple years," he said.

NET will use the network node technology in its IDNX LAN/WAN Exchange enterprise router. "We want to utilize the routing and directory functions in network nodes," said Bobby Johnson, vice-president and general manager at NET. "We think the APPN network nodes will help users configure their networks and help grow distributed computing environments."

3Com also restated its intention to incorporate APPN network nodes into its NET-Builder bridge/router products ("3Com lays plan to weave SNA data in internetworks," NW, March 16).

— Michael Cooney

Firms announce database wares

continued from page 3

lined its data warehouse concept: the speed of querying a database — meaning how long it takes to get a response — and the inherent limitations of the SQL standard for posing business questions.

"SQL is poor at doing comparisons," such as growth or decline

in year-to-year sales, "which is the bedrock of business analysis," Ringo said.

Finding solutions

Red Brick addressed these shortcomings in the IBM design by adding proprietary extensions to SQL that allow users to pose basic business questions to the database in simple language, such as "Compare sales in Chicago to sales in New York for

1991." The extensions also increase the performance of the database's ability to pull together information and formulate a reply.

The result is a warehouse that is easier to query and faster with responses than the IBM scheme, said Richard Finkelstein, president of Performance Computing, Inc., a Chicago database consultancy.

"Information Warehouse

doesn't attempt to solve the problem of joining [separate] database tables" of related information, such as market demographics and sales projections, for example, Finkelstein said. "It's just a way of knowing what's out there and how to get to it."

Prices for the Red Brick Warehouse range from \$50,000 to \$250,000, depending on the VAX server configuration. It requires VMS Version 5.2 or later. □

AT&T SDN plans sparks interest

continued from page 3

William Horst, a computer specialist with the General Service Administration's information systems operations division in Philadelphia, said, "This is exactly the type of service that we will be looking for from [the Big Three]."

The GSA, an early user of Switched Multimegabit Data Service, may eventually look for an interexchange SDBN-like service based on ATM to link GSA offices

in major cities across the country. "AT&T is definitely headed in the right direction," Horst said. "We'd like to see others follow."

Bob Valliere, a senior project manager for communications systems at JCPenney Company, Inc. in Dallas, agreed. "It's pleasing to hear that AT&T is heading down the path to ATM," he said. "It's the direction we want [our carriers] to follow."

The documents show AT&T plans to support ATM permanent virtual circuits in 1994 and switched virtual circuits in 1995 (see graphic, this page). "I think

these goals are realistic and attainable," said Lippis.

Michael Kilbane, president of the International Communications Association user group and general manager of systems development at Diamond Shamrock R&M, Inc., said, "One would have a hard time finding fault with the network infrastructure [outlined in the NW article] because it's a strong one and fairly broad. But before I'd commit to SDBN, I'd want to know to what extent AT&T will manage this service and what could be left to the user." □

AT&T overview of network technologies and services

Available and planned offerings

	Virtual and public services				Private-line services		
	Switched T-1 carrier	SMDS cell relay	ATM switched virtual circuits	Broadband ISDN public cell relay	Frame relay	Private-line T-carrier	ATM permanent virtual circuits
Access speed (bit/sec)	56K to 1.544M	1.544M to 45M	1.544M to 600M	56K to 600M	64K to 1.544M	56K to 45M	1.54M to 600M
Suitable networks	Private and public	Private	Private and public	Standard public net for global service	Private and public	Private	Private
Suitable traffic	Nonbursty	Bursty	Bursty and nonbursty	Bursty and nonbursty	Bursty	Nonbursty	Bursty and nonbursty
Availability	1990	1992	1995	1997	1991	1985	1994
Applications supported	Voice, data, image and video	Data and image	Voice, data, image and video	Voice, data, image and video	Data and image	Voice, data, image and video	Voice, data, image and video
Access method	T-1, Primary Rate Interface and 56K bit/sec DDS	T-1 and T-3	T-1 to NxOC-1	T-1 to NxOC-1	Fractional T-1 to T-3 and 56K bit/sec DDS	Fractional T-1 to T-3	T-1 to NxOC-1
Switching technology	Circuit switched	Fast packet	Fast packet	Enhanced ATM with ISDN signaling	Fast packet	Time-division multiplexing	Fast packet
Network transit delay	Less than 1 msec	Less than 100 msec	Less than 100 msec	Less than 100 msec	Less than 100 msec	Less than 1 msec	Less than 100 msec
Call setup time	2 sec	0 sec	Less than 100 msec	Less than 100 msec	0 sec after predefined virtual circuit	0 sec after predefined virtual circuit	0 sec after predefined virtual circuit

ATM = Asynchronous Transfer Mode
DDS = Dataphone Digital Service
NxOC-1 = Multiples of 51.8M bit/sec Optical Carrier Level 1
SMDS = Switched Multimegabit Data Service

GRAPHIC BY SUSAN J. CHAMPEONY

EDA/SQL reaches into net

continued from page 2

idle requests and giving users more control over database access," said John Senor, vice-president of the Enterprise Data Access Division at IBI.

Last September, IBI teamed with IBM to announce that EDA/SQL would be the data access component in IBM's Information Warehouse framework for managing and providing access to enterprise-wide data.

Since then, IBI has been developing relationships with many other vendors. Already, the product supports more than 50 databases and file structures on 35 platforms.

EDA/SQL allows SQL-based applications residing on personal computers, mid-range computers and mainframes to make SQL requests to EDA/SQL servers for processing relational and non-relational data.



This access to nonrelational data is what makes the phased-in support of IBM's database interface specification, DRDA, an important enhancement. Until now, DRDA supported access only to other relational data sources. DRDA support in EDA/SQL gives users access to all the nonrelational file structures supported by IBI.

EDA/SQL Release 2.0 also includes enhancements to its SQL support. By using a new SQL Translator, the offering now provides a more standardized approach to SQL through ANSI/ISO SQL compatibility and offers a

type of character support required for international languages. Release 2.0 also includes two new database-specific interfaces, called EDA/Dynamic Extenders, which support IBM's SQL/DS and OS/2 Database Manager.

In the area of increased performance, IBI claims EDA/SQL 2.0 features much faster data

transfer speeds over the network and CPU utilization improvements that provide service to more users.

The new query analyzer, EDA/Smartmode, predicts the resource utilization of requests sent to EDA/SQL servers and governs their execution. The analyzer collects and stores statistics on how users' requests are processed against various data sources so that queries can be optimized in terms of accessing a particular database application.

The price for EDA/SQL server software is based on configuration and ranges from \$8,000 to \$118,500. EDA/SQL client software is priced from \$175 to \$350 per workstation.

EDA/SQL Release 2.0 will be available initially for IBM MVS and MV mainframe computers. The additional client and server platforms will be available in June for Version 1.0 or 1.1 with 2.0 support for these components to be announced later this year. Finally, the SQL/DS Extender will be released in June, and the OS/2 Extender is expected by year end. □

Upgrade allows bridging

continued from page 2

Robbins, director of communications research at the Boston-based Aberdeen Group, Inc. "While SRT will help ease the complexity, Proteon's goal is to go even further and accommodate every imaginable bridging requirement."

Proteon acknowledged that it would be making a software-related announcement but declined to provide details.

The SRT algorithm — currently, an IEEE draft standard — combines transparent bridging technology, used primarily to link Ethernets, with source routing, which is used to bridge token-ring nets.

Users can implement either method on their FDDI backbones, depending on their network. Before SRT, LANs using the different schemes could not be bridged to one another unless encapsulating or translating bridges were used.

But experts said the latter two methods can lead to problems such as increased overhead, packet duplication and broadcast storms. Furthermore, when deploying a translating bridge, the user must configure each individual LAN device to transmit messages of fixed length because the bridge is not capable of fragmenting frames.

The Adaptive SRT software will work with any other fully compliant SRT bridge and have the capability to emulate IBM's 8209 Ethernet-to-Token Ring LAN bridge.

Release 12 will also include support for VINES and AppleTalk 2, bringing to 10 the number of transport protocols that Proteon supports. The eight others are the Transmission Control Protocol/Internet Protocol, Xerox Corp.'s Xerox Network Systems, Hewlett-Packard Co. Apollo Division's Domain, Digital Equipment Corp.'s DECnet Phase IV and

DECnet/OSI, Apple's AppleTalk, Novell, Inc. Internetwork Packet Exchange (IPX) and Open Systems Interconnection.

The new software will also enable the CNX 500 and 4100+ to support DECnet and IPX over frame relay wide-area network links.

Previously, the frame relay interface supported only X.25 and TCP/IP traffic.

The Release 12 software is expected to be available this quarter. Pricing was not available.

Simplified upgrades

Proteon is also expected to unveil a memory card with erasable programmable read-only memory (EPROM) circuits, making it faster and easier to load bridge/router software.

The card is expected to reduce the time needed to load new software to less than 20 seconds by making it possible to boot the device from EPROM chips instead of via a floppy disk or by replacing PROM chips with every new software update.

"This feature will greatly minimize network maintenance by making it easier for users to control which one of the vendor's numerous software revisions they're using," said Rick Malone, a principal at Vertical Systems Group, a Dedham, Mass.-based consultancy.

The new card is expected to be available next month.

Proteon is also expected to unveil a dual-token ring LAN card for the CNX 500. Whereas the three-slot CNX and 4100+ can currently support a maximum of two token-ring LANs and a WAN module, the new module will enable it to support as many as four token rings and a WAN link.

Finally, sources said Proteon plans to phase out its 4200 FDDI bridge/router. The device will be supplanted by the Reduced Instruction Set Computing-based CNX 500 bridge/router, which can be equipped with an FDDI LAN interface card. □

BT positions OSI mgmt. product

continued from page 3

The service will also require customers to use a scaled-down version of Concert IMS to access regional support centers.

Users will be able to access a logical view of their network and access trouble-ticketing systems and various management reports.

In the future, BT North America hopes to tie the net management service into its ordering and billing systems so users can order services and receive billing information on-line, according to McWalters.

The carrier currently uses a net management system called the Concert Data Manager at its central control center and regional sites that manages only BT North America's packet-switched equipment and is not accessible by users.

BT North America will offer to help customers link on-site Concert IMS systems to other net management systems. Under a Concert Partners Program, about 30 vendors have agreed to work with BT to link their net management systems to Concert IMS by various means, including Common Management Information Protocol/Common Management Information Services links. □

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Microsoft details LAN Manager

continued from page 1

ware] and enterprise server [software]," said Richard Barth, product manager for Microsoft. "While Windows NT alone will work great in small groups, LAN Manager for NT will give you the tools you need to administer a large network."

To distinguish between the varying network capabilities of the products, Microsoft has dubbed Windows NT a desktop server while referring to the LAN Manager for NT software as an enterprise server.

Windows NT will offer small work groups peer-to-peer file and print services, local administration tools and a local "registry." Any LAN Manager client with the proper security privileges will be able to access an NT desktop server's files and applications.

Windows NT desktop servers, however, cannot share their databases of users and access privileges with other servers, meaning each server has to be administered separately.

Windows NT's object-based security can limit access to any object on an NT net.

Windows NT machines will also keep both hardware and user profiles in a local registry. Hardware profiles contain machine information, such as random-ac-

cess memory and disk space, among other things.

User profiles, on the other hand, store information about each user and allow more than one person to work in their own customized, secure environment on an NT machine.

LAN Manager for NT extends the reach of those services throughout a larger net. It lets groups of NT machines belong to logical domains that can span many different servers.

With this release of LAN Manager, Microsoft introduced the concepts of "trusted domains" and "aliases" into its distributed naming service.

Trusted domains will make one domain aware of the existence of others without administrator intervention. Aliases enable administrators to create supergroups that span more than one domain.

The LAN Manager for NT server will also make it possible for users' profiles to follow users around a domain or even across domains, configuring any machine a user logs on to with the personalized profile stored at the user's home personal computer.

Pricing, which could be set between \$150 and \$1,000, has not been finalized for Windows NT, according to Barth. However, LAN Manager for NT will likely sell at or close to today's LAN Manager prices, he said. □

New version of Windows OS eases LAN connection

Microsoft Corp. next week will release a more networkable version of its Windows operating system at Windows World '92 in Chicago.

Slated for immediate availability, Version 3.1 is expected to streamline the unwieldy processes of connecting to and using local-area network resources from a Windows 3.0 client, according to Microsoft.

Major improvements include faster access to files stored on servers; a more object-oriented interface, which lets users drag and drop files between drives, whether mapped locally or remotely; and an autoconfiguring installation process that attempts to identify and install the correct network driver without user intervention. Version 3.1 will ship with net drivers for Microsoft's LAN Manager and Novell, Inc.'s NetWare servers.

The company is also expected to ship next week the Windows Resource Kit, a \$19.95 package of documentation and utilities designed to smooth the

way for LAN administrators with Windows 3.1 clients.

An update of the kit, due in July, will add a network utility called Win Login that will extend registry capabilities to Windows 3.1 and be part of Windows NT when it ships at year end (see "Microsoft details new LAN Manager," page 1).

With Win Login, LAN administrators will be able to create multiple user profiles for one machine, with separate passwords, file privileges and desktop configurations. User profiles in the LAN Manager server will also follow users around the net, configuring Windows machines they log on to as close to their home net station as possible.

Windows 3.1 is expected to sell for \$149.95, the same price as the previous revision. Version 3.0 users can buy an upgrade kit directly from Microsoft for \$49.95. The kit will be available commercially at a suggested retail price of \$79.95.

— Margie Wylde

Feds, states advance nets

continued from page 1

there's no need for separate government X.25 nets if EBT data can be integrated into the existing commercial network infrastructure.

In Maryland, where food stamp and welfare recipients are being issued a debit card and trained in its use with grocery POS terminals and bank ATMs, the state's move to EBT has been justified through cost.

Stan Frerking, executive director of the Maryland Department of Human Resources, said he projected savings of \$1.2 million per year for Maryland through EBT.

The Maryland EBT program now has 32,000 beneficiary recipients and is expected to grow to 300,000 recipients by year end. Recipients can use their EBT debit card in grocery stores where Maryland's prime contractor for the EBT system, Deluxe Data Systems, Inc., has installed POS terminals at check-out counters.

The cashier swipes the EBT debit card through the POS device to verify the recipient's personal identification number (PIN) and calculate the balance in a recipient's food stamp account maintained on a database in Dallas. The Maryland recipient can also use any ATM operated under the Most system to get cash from an established welfare account in lieu of a welfare check.

The newly operational Maryland EBT system has already been enthusiastically endorsed by Giant Foods, Inc., a large retail grocery chain.

Michael Mann, manager of systems and programming at Giant Foods, said the system has eliminated the problem of physically handling food stamps. Store managers no longer have to void every food stamp and wait for the credit, which usually comes several days later, he said.

But Mann noted that the net presented a point of failure and that net downtime requires store management to call the EBT contractor directly to process the purchase.

"It's going to go down from time to time," he said. "If the system goes down, it gets ugly."

Houston push

In the Houston project that begins this week, Citibank Services, Inc. will act as the main contractor in a pilot in which 550 retired railroad workers have volunteered to receive their social security and Railroad Board retirement pensions electronically. As many as 5,000 retirees will eventually be enrolled in the pilot.

Boog Davidovac, vice-president of Citibank EBT Services,

said the federal government had a Houston EBT pilot last year for social security benefits but the pilot set to be launched next week will be the first federal multiple-benefits EBT pilot, combining social security and pension benefits into one direct-payment card.

Card holders will be able to use any ATM or retail POS terminal on the Pulse net. Davidovac said plans are also being considered to integrate Citibank's own Citishare net into the Houston pilot for nationwide net access.

Officials in the U.S. Treasury's Financial Management Service (FMS), the federal bureau responsible for setting a governmentwide EBT policy, said they hope the Houston pilot will show that all federal payments can be distributed through EBT.

Ron Rosenblum, financial program specialist in the FMS electronic initiatives branch, said the government disburses more than 750 million payments annually, about 58% of which are still made by check. He said social security payments, benefits from the Department of Veterans Affairs, tax refunds, federal salaries and payments to vendors are all candidates for EBT. □

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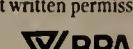
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ALLIGATORS IN THE SWAMP

Unforeseen problems that can put the bite on your network



Detours on the road to the DCE

For months, I had been reading about how the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE) will offer users new and better ways of handling file sharing, remote procedure calls and security. So when my friend Dave asked me to help him solve a networking problem at his small company, I was eager to apply DCE technology to help pave the way to the future. Unfortunately, I didn't know how many potholes I'd hit.

Dave's engineering staff used approximately 12 custom-assembled Intel Corp. 80386- and 80486-based systems on an Ethernet local-area network running Interactive Systems Corp.'s Unix System V Release 3.2 Version 2.2 and the Transmission Control Protocol/Internet Protocol Version 1.2. His sales and administrative staff used 12 additional Intel-based systems of mixed origin and CPU type running as stand-alone DOS machines. Dave wanted to tie all these computers into a single network that would offer end users corporately electronic mail and file backup, as well as shared printer services and shared file services.

To accomplish this, we decided to use SunSoft's PC-NFS to integrate his personal computers with a dedicated Unix server. Because PC-NFS is supported by the DCE, we thought it would have a strong role in tomorrow's world of open systems. But rather than run PC-NFS with Andrew Corp.'s Andrew File System, which is the heart of the DCE's file system, we decided to implement Interactive's version of Network File System (NFS) on the server.

While PC-NFS handled Dave's shared file and printer services requirements, it didn't address E-mail and backup. To handle these needs, we chose SunSoft's PC-NFS LifeLine add-on product. LifeLine gave us DOS-based mail management and the ability to back up the PC hard disk files to the Unix server.

We then looked at hardware options for the server. We needed enough disk space to hold the backup files from all of Dave's PCs and Unix workstations, as well as a tape drive that would back up the files onto a single tape. With this in mind, we custom-configured an 80486-based server with 16M bytes of random-access memory, 1G byte of disk storage, 1G byte of tape storage, an eight-port serial interface for printer connections and a Western Digital Corp. WD8003EP Ethernet adapter card. We also ordered WD8003EP cards for the PCs.

Once the server was constructed and tested, we began to phase in the network by implementing mail and shared file services on two PCs. This limited implementation went so well that we added three additional PCs. As we did, we encountered two severe problems:

- Occasionally, the server would be overrun by extraneous "portmap" processes. Under typical circumstances, one portmap process maps NFS connections into TCP/IP sockets so that programs on the PCs communicate with the proper programs on the server. In Dave's network, extra portmap processes were being activated for no apparent reason at seemingly random times.
- The server experienced random periods of mind-numbing slowness. A single character typed into a PC's Telnet virtual terminal session with the server took a second or longer to echo back.

After calling Interactive and ascertaining that neither of these problems were known bugs in its Unix software, we proceeded to tough it out ourselves. We stopped adding new PCs to the network and kept PC-NFS mail services active but disabled file services. The portmap problem did not return, but the slowness

Enck is a network analyst with Forest Computer, Inc., an Okemos, Mich.-based data communications firm.

continued, accompanied by a high number of packet errors on the network. This led us to believe the problem was hardware-related.

We spent the next five days performing tests on the network. Despite our best efforts, the network slowdowns persisted. In desperation, we began pouring over the hardware and software documentation, looking for some clue.

We found the clue in the README file on the utility disk that came with the WD8003EP Ethernet cards. The on-disk documentation hinted about less-than-total backward compatibility with the previous model, the WD8003. Dave's Unix server had the newer WE8003EP card, and only this server was experiencing the slowness. Was incompatibility between the server software and the WD8003EP card causing the problem?

To see if this was the case, we obtained the release notes for the latest version of Interactive's TCP/IP, Version 1.3. It supported the WD8003EP as a driver. Version 1.2, which Dave was running, supported the WD8003 driver. This seemed to prove that the incompatibility was between the TCP/IP software and the server's WD8003EP card.

To test our theory, we replaced the server's WD8003EP card with a WD8003 card.

Immediately, the slowness problem went away. So we decided to leave the WD8003 card in the server until an upgrade to TCP/IP Version 1.3 could be scheduled.

The next day, I was struggling to find acceptable interrupt, direct memory access and port assignments for an Ethernet card I was putting into a PC. I was in a hurry, so I came up with settings that seemed reasonable. However, when I started the client services, the PC could not find the server. This same situation had occurred

when I was adding the second set of PCs to the Unix server (the PC could transmit but not receive), so I knew I had chosen an interrupt that was already being used by another PC card. That's when I got a call from Dave saying that the portmap problem had returned.

Within minutes, we pinpointed the problem: When a PC-NFS client does not receive an acknowledgment from its default NFS server — in this case, the Unix server — it sends out broadcast messages looking for other NFS servers. Because of the interrupt conflict on the PC Ethernet card, PC-NFS could not see the response Dave's server was sending, so the PC started broadcasting. When Dave's NFS server saw this broadcast, it started generating portmap entries. We correlated the occurrences of the portmap problem with the installation of the PC boards. Sure enough, every occurrence had coincided with a PC installation.

Armed with this knowledge, we reenabled PC-NFS file services for the five installed PCs. No new problems or complications ensued. We theorized that as long as we thoroughly tested the Ethernet card in each PC before adding it to the live net, we'd be able to avoid the portmap problem.

The rest of the network installation went fairly smoothly. But getting to a point of stability had not been easy. And given the problems we experienced with a small network like Dave's, I shudder when I think about the implications for larger companies looking to tie PCs into a DCE. With this in mind, here are some suggestions for avoiding some of the potholes we ran into:

- Assume that backward-compatible hardware isn't. Contact both hardware and software vendors to confirm compatibility with one another.
- Test and diagnose every PC using a loop-back connector *before* it goes on the network. If we had done that, we could have avoided the portmap problem by seeing that the PCs could transmit but couldn't receive acknowledgments.
- If possible, get access to a LAN monitor. If we could have peered into the cable, we would have seen that the server was causing the problems.

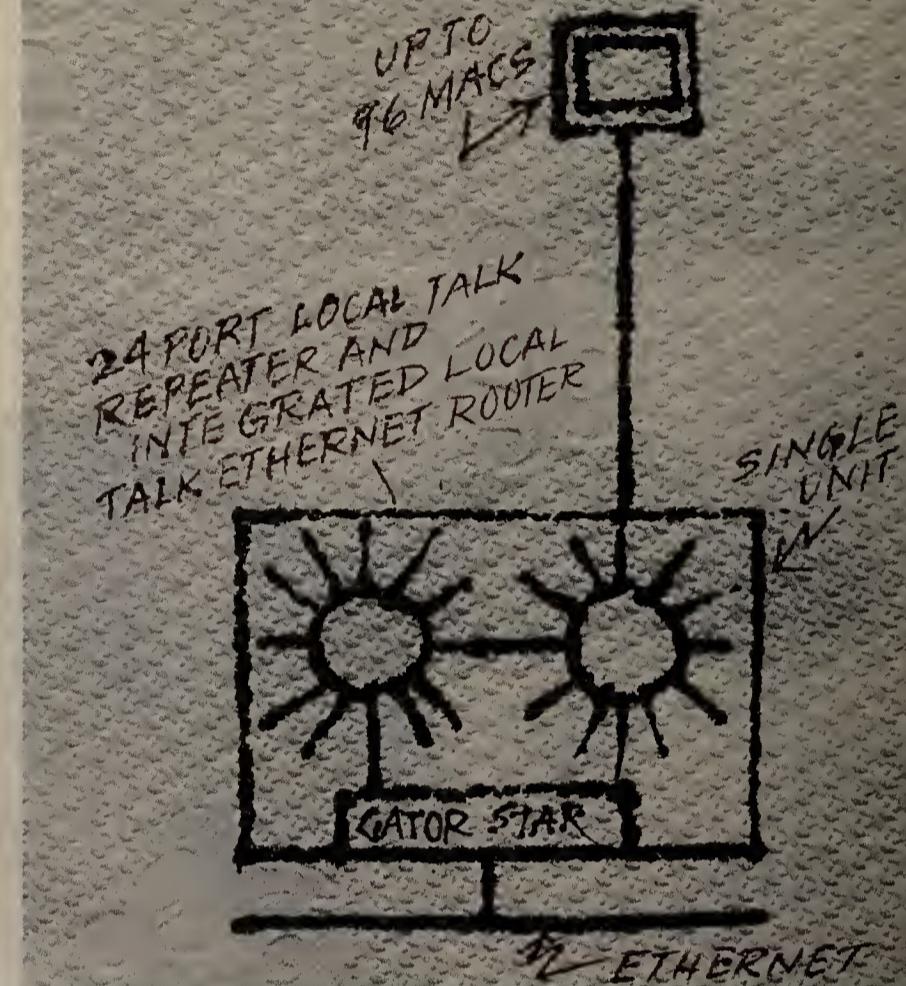
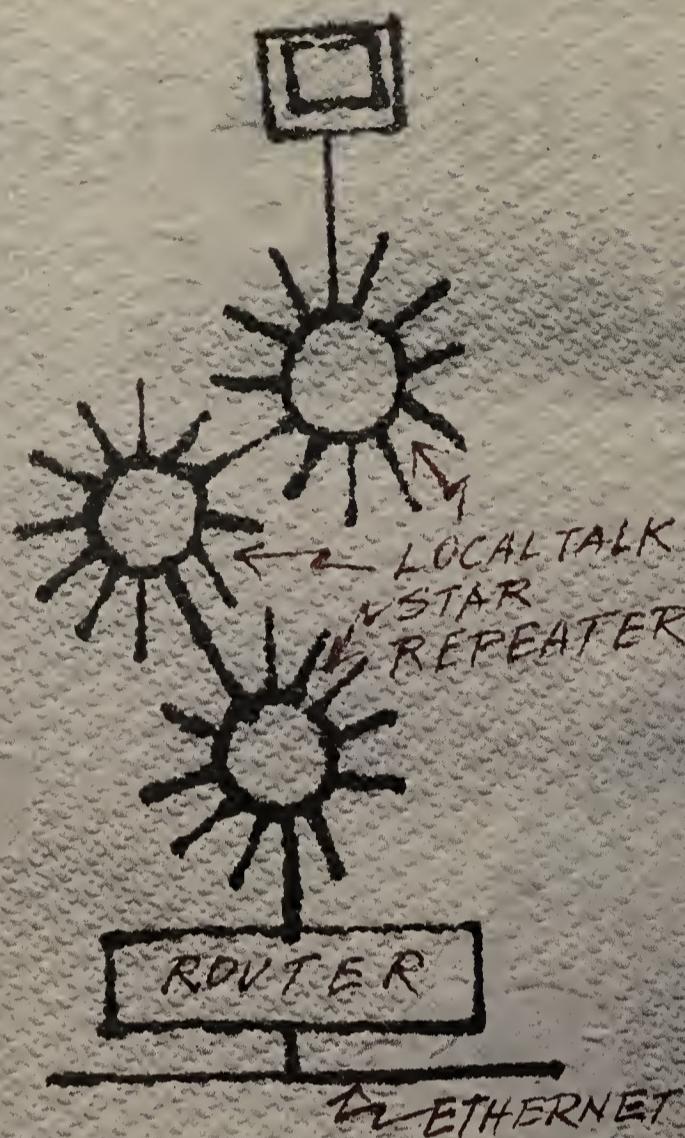
As we found out, the road to the DCE can be bumpy. But with proper planning and reasonable patience, you can avoid some of the detours. □

BY JOHN ENCK

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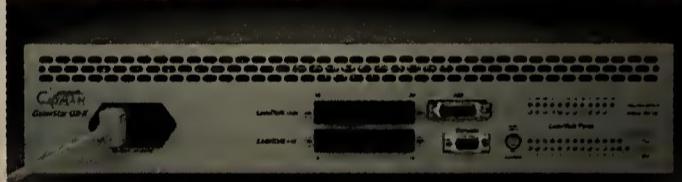
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Because while the ability to travel to the stars may be centuries away, the ability to control them is already here.



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